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A Lecture ON DIGITALIS IN AURICULAR FIBRILLATION.[1]

Being the Sydney Ringer Memorial Lecture delivered at University College Hospital Medical School

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GENTLEMEN,—From the first introduction of digitalis into therapeutics its influence on the rate of the heart was recognised. The statement of the early writers generally runs that the pulse is slower and more regular, but this is much more pronounced in some cases than in others; and it is the general feeling that it is most marked in very irregular pulse. This slow pulse of digitalis, which was the only objective change in the circulation which could be observed by the methods of the time, received much attention from clinicians in the first half of the nineteenth century, but no further progress was made until Traube in 1851 showed that in mammals large doses injected intravenously slowed the pulse by stimulation of the vagus centre, and after some discussion this was generally accepted as the explanation of the slow pulse observed in clinical cases treated with digitalis. The stimulation of the vagus centre is undoubtedly the cause of the slowing in experimental animals under digitalis, for it disappears when the vagi are cut or paralysed with atropine. More than a century after the introduction of digitalis the knowledge of its therapeutic action had made but little further progress, and was meagre and unsatisfactory. During the last 20 years, however, considerable advance has been made owing to the introduction of the new methods of analysing cardiac arrhythmias.

AURICULAR FIBRILLATION.

In 1905 Mackenzie differentiated a special form of heart irregularity in which digitalis proved especially valuable and in which it generally caused a more marked fall in the rate of the pulse than in other forms of heart disease. This irregularity was that now known to arise from auricular fibrillation. In other conditions digitalis is no doubt of value and it also slows the pulse, but in auricular fibrillation with a rapid and extremely irregular pulse it is almost a specific, and here the slowing of the pulse proceeds parallel with the general improvement, while in other conditions the two effects show no such definite relation; in these the pulse may be slowed without the general condition being better or there may be no significant change in the pulse, while the breathlessness and other symptoms are alleviated. On looking over the older records one recognises that in the cases in which digitalis was most effective and caused the greatest slowing of the pulse the condition was in all probability what is now known as auricular fibrillation.

I may remind you that in auricular fibrillation the pulse is characterised by extreme irregularity in rhythm and in strength and the force of the beat bears no definite relation to the length of the preceding interval. The venous pulse tracing (Mackenzie) and the electro-cardiograph (Lewis) give no indication of a true auricular contraction, and in accordance with this a presystolic murmur present before the inception of fibrillation disappears on its onset (Mackenzie). The electro-cardiograph shows that the auricle is not at rest, however, by a series of minute oscillations which persist throughout.

The interpretation of these conditions is that the pacemaker has lost its leadership and that its regular beating has been superseded by multitudinous impulses which arise from many points of the auricle and keep that chamber in continuous incoördinated activity; one fibre relaxing while another contracts, no change in the total volume of the chamber results, and blood is not driven into the ventricle. This mob of impulses from the auricle in passing to the ventricle is reduced in number by the auriculo-ventricular band being unable to transmit them rapidly, and it may be supposed that of those which actually reach the ventricle a certain number are ineffective through striking it at a refractory period in its cycle. But enough of them pass to it to cause a very irregular rhythm, and this is accompanied by a marked loss in efficiency, as is shown by a fall in the blood pressure which ensues at once when the regular rhythm of the heart gives way to auricular fibrillation.

ACTION OF DIGITALIS.

Under suitable quantities of digitalis in this condition the pulse becomes slower and the beats are less unequal in strength. If the drug is pushed, the pulse may run down to about 40 and become quite regular and equal. And as the pulse falls in rate the general condition improves in the most unmistakable way, breathlessness, dropsy, and lividity disappearing rapidly. The rate of the blood-flow through the peripheral vessels has been measured by Stewart and Scott, who found it quickened as the pulse falls in this condition.

This change is not due to any change in the condition of the auricle, which continues to fibrillate as before, as is shown by the character of the venous pulse remaining unchanged (Mackenzie) and by the persistence of the oscillations in the electro-cardiogram (Lewis). The impulses must therefore be generated in the auricle as before the treatment began, but they can no longer act upon the ventricle in such profusion, and it therefore beats more slowly and more regularly. The conduction of impulses from auricle to ventricle is less rapid then before digitalis was given (Lewis). This salutary impairment of the conductivity can be induced by stimulation of the vagus in man and in animal experiments during auricular fibrillation, while the oscillating contractions in the auricle remain unchanged by the inhibition—that is, the effects under digitalis may be exactly simulated by stimulation of the vagus, and it was therefore natural to attribute the action of the drug in auricular fibrillation to its stimulating the vagus centre in the way which has been shown in normal rhythm in man and animals. The pleasant harmony between the clinical and the experimental results appeared to be unimpaired.

But in a number of observations which I made in Mackenzie's wards along with Marris and Silberberg we satisfied ourselves that in auricular fibrillation the change in conduction is not inhibitory in nature, for it is not prevented by complete paralysis of the vagus by atropine; it must therefore arise from some direct action on the connecting tissue.[2]

On the other hand, the slowing observed under digitalis in most other cardiac conditions in man was removed by atropine; here the action was induced through the inhibitory mechanism. In experiments on animals, I found that when the vagus was cut or paralysed with atropine, digitalis did not slow the pulse and the conduction remained unimpaired until an advanced stage in poisoning far beyond that seen in the therapeutic use. Even when auricular fibrillation was induced in these experiments by electrical stimulation, the irregularity persisted unchanged by digitalis if the vagi were previously put out of action.

We have thus two types of digitalis action in the heart. In the first, which may be called the normal reaction, the heart is slowed through excitation of the inhibitory mechanism. This occurs in hearts in normal rhythm both in man and animals. The second or anomalous reaction occurs only in the auricular fibrillation in man and not in that experimentally induced in normal animals; here the heart is slowed by direct action on the muscle independently of the inhibitory mechanism.

There thus appeared to be a specific reaction in auricular fibrillation in man which differed from that known else-

[1] Fuller details of the experiments will be published in a paper in the Journal of Pharmacology and Experimental Therapeutics.

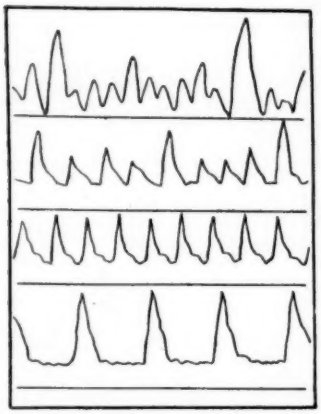
[2] This view has been contested by Sutherland in the Lumleian Lectures (THE LANCET, March, 1917), who points out that the inhibitory mechanism is excited in a high degree by digitalis and that doses of atropine may be unable to paralyse it under this excitation, though they suffice to put it out of action in ordinary conditions. This objection arises from a misconception. Digitalis excites the vagus inhibitory centre in the medulla, while atropine paralyses the terminations in the heart, and their action is thus not antagonistic on the same tissue, and the excitation does not oppose the paralysis. This is shown by the fact that when atropine has been used electrical stimulation of the vagus does not slow the heart, however much the strength of the shocks is increased. In the same way, however much digitalis excites the inhibitory centre, the impulses fail to affect the heart after atropine. No amount of excitement and shouting at one end of a telephone wire will be effective if the other end is disconnected from the receiver.

where. It is true that some analogies are presented in experimental conditions. Thus it was shown by Fagge and Stevenson (1865) that in the frog digitalis often causes intermission of the ventricle, while the auricle continues in its ordinary rhythm, and this irregularity is now known to be due to failure of the conduction through direct action on the heart, for it continues after atropine. Similarly in a late stage of poisoning in mammals digitalis interrupts the passage of impulses along the auriculo-ventricular fibres through a direct action on them. But these analogies can hardly be applied to the problem of auricular fibrillation in man, for the frog is too distant a relation to the sick patient, and the impairment of conduction in mammals from direct action occurs only in a late stage of poisoning.

EXPERIMENTS ON THE ANOMALOUS REACTION TO DIGITALIS.

It seemed possible that the anomalous reaction was peculiar to the form of auricular fibrillation in the human heart, and this unsatisfactory view could only be refuted by changing the condition of the mammalian heart so that it too would give the anomalous reaction. During the last two years I have succeeded in doing this in the surviving heart of the rabbit and cat perfused with Ringer's solution. When the perfusion has been carried on for some time—20 to 30 minutes—and auricular fibrillation is excited by electrical stimulation, the administration of strophanthin slows the beat of the ventricle and makes it more regular, while the fibrillation of the auricle continues unchecked. (Fig. 1.) This occurs though the vagi have been cut in the preparation and though the peripheral mechanism is paralysed by atropine added to the Ringer. Finally a slow, perfectly regular beat is observed in the ventricle, while the auricle continues to fibrillate; the multitudinous impulses emitted by it fail to react on the ventricle, which takes up its own slow rhythm. The reaction to digitalis of these perfused hearts in auricular fibrillation is thus exactly analogous to that of the human heart in spontaneous auricular fibrillation.[3]

FIG. 1.



Tracings of the perfused rabbit's ventricle during auricular fibrillation from electrical stimulation. The highest tracing was taken before strophanthin was applied, the second after it had begun to produce its effect, and the third and fourth after the ventricle had become regular. The fibrillation persisted in the auricles.

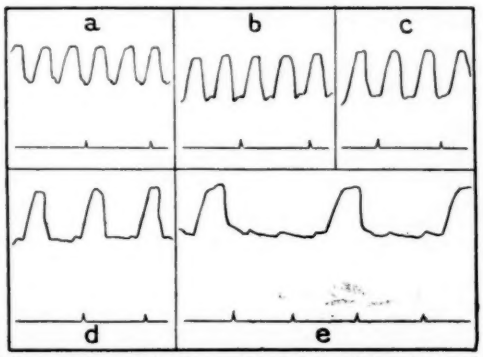
The anomalous reaction is therefore not specific to man, but is also elicited in animals under abnormal conditions.

The two types of digitalis reaction may thus be elicited at will in animals according to the method of preparation. There seemed a prospect that some light might be shed on the condition of the heart in auricular fibrillation in man by an examination of the conditions in which the anomalous reaction was obtained in animals.

I examined the effect of the perfusion of strophanthin 1 : 500,000 of Ringer's solution in the surviving rabbit's heart beating in normal rhythm. The first effect noticed was generally a slowing of the beat of the whole heart, which indicates that the pacemaker was depressed. Sooner or later the ventricle began to miss beats occasionally, while the rhythm of the auricle remained regular; this indicates that the conduction of impulses from auricle to ventricle is impaired and the further progress of this lesion leads to more frequent intermission, half rhythm, and finally to the ventricle only responding to every fourth or sixth beat of the auricle. (Fig. 2.) This action on impulse formation and conduction was unchanged by the addition of atropine to the perfusing fluid, so that it must have arisen from a direct action on the conducting fibres and not from excitation of the intracardiac inhibitory mechanism.

The changes in rate of the perfused heart under strophanthin are accompanied by increased strength of contraction and lessened diastole, but these are common to both the perfused heart and the heart *in situ*, so that they need not occupy us in the present problem. It must be added that the slowing under strophanthin in the perfused heart has been noted by several previous investigators.

FIG. 2.



Rabbit's ventricle perfused. *a*, Normal; *b*, slight slowing from strophanthin; *c*, more marked slowing; *d*, half rhythm; *e*, rhythm of 1 : 4 and 1 : 3; the auricle beats can be seen during the intervals in *e*.

When a heart is perfused with strophanthin and its response is tested to auricular fibrillation at intervals, it is found that during the earlier stage of slowing the auricular excitation has the usual response in the ventricle, but later, before the actual intermissions occur, the irregularity of the ventricle during auricular fibrillation becomes less marked, and still later the ventricle remains fairly regular while the auricle fibrillates. There can be no question that the decreased conduction of the perfused heart under strophanthin is the explanation of the improvement observed from strophanthin in the perfused heart when the auricle is fibrillating.

We have thus two separate reactions to the digitalis group—one which is seen in patients with normal rhythm and in animals with the heart *in situ*, and in which the slowing is inhibitory in character, the other seen in auricular fibrillation both in man and in the perfused mammalian heart, when the slowing arises from direct action on the heart tissue.

THE PART PLAYED BY MALNUTRITION OF THE HEART.

The anomalous reaction seen in the last case is obviously not caused by the auricular fibrillation, for it does not occur in animals' hearts *in situ*, and in addition an analogous change is seen in the perfused heart when no auricular fibrillation is present. Some change in the condition of the heart quite apart from the fibrillation must therefore be the underlying ground for the change in reaction. And as the change can be caused in the animal heart by substituting perfusion for the ordinary circulation, it is interesting to speculate on its nature.

The perfused mammalian heart shows many differences in reaction from the normal heart. It is much more adapted for studies in experimental pathology and therapeutics than for the elucidation of the normal physiology. And, indeed, not much is to be expected of it, for it receives no source of energy except inorganic salts. Even oxygen is given it in inadequate measure, for Evans calculates that the heart perfused with Ringer's solution must receive about three times its weight of fluid per minute to satisfy its oxygen needs, and no perfusion ever approaches this ideal in my experience. The perfused heart is therefore a starved heart, and its starvation (food and oxygen) appears to me the explanation of its anomalous reaction to digitalis. This view is strengthened by the fact that the reaction is seen best when the heart is perfused for some time before the strophanthin is given; apparently the state of nutrition is only reduced slowly, so that if the drug is applied immediately after the perfusion is commenced, the reaction may depart much less from that seen in the heart *in situ*. And further, those observers who have perfused the heart with blood do not seem to have observed any such slowing and block under

[3] After this research was well advanced, Professor Edmunds, who was my collaborator in describing the first case of auricular fibrillation recognised in man, wrote me that he also had observed the occurrence of this reaction in animals in auricular fibrillation, and had demonstrated it to his class repeatedly. He thus discovered it independently and apparently before my experiments.

strophanthin as form the most striking feature of action on the heart perfused with Ringer's solution.

There are, therefore, sufficient grounds for ascribing the change in the reaction of the perfused animal heart to malnutrition. Are we justified in drawing an analogy to the human heart in auricular fibrillation? Is the fundamental factor here the malnutrition, the auricular fibrillation only a secondary one? There are some grounds in support of this view. Thus in two cases in which there was normal rhythm in man we obtained slowing and block from digitalis, and these proved to be due to direct action, for they were not removed by atropine. Thus the human heart can give the anomalous reaction even when the rhythm is previously normal. On the other hand, some cases of auricular fibrillation in man fail to give the anomalous reaction. It is therefore proved that this reaction is not inseparably attached to auricular fibrillation. And there is, on the other hand, evidence that the heart muscle is gravely injured in cases of fibrillation. Thus the irregularity is greater than is accounted for by the fibrillation alone. And the absence of proportion between the strength of the individual beats and the duration of the preceding interval has been ascribed to a condition of the heart fibre somewhat analogous to that which gives rise to the pulsus alternans. There is therefore justification for the view that in the human heart also the essential character is not the auricular fibrillation but the underlying weakness of the heart muscle.

I do not mean to suggest that this debilitated state of the heart is the sole ground for the anomalous digitalis reaction, and that the auricular fibrillation is an altogether independent feature. For if this were the case, it would be impossible to explain why this reaction occurs so frequently in auricular fibrillation and so seldom in other forms of cardiac debility.

The connexion may be somewhat as follows. In extreme malnutrition of the heart, such as is seen in the perfused rabbit's heart, the anomalous digitalis reaction is elicited without fibrillation. In man this state is comparatively seldom seen while the rhythm is of the normal type, but the onset of auricular fibrillation often induces it. That auricular fibrillation is capable of aggravating greatly any inefficiency already present is obvious. For in normal rhythm there is a measured sequence of events, and due time is given for the recovery of the ventricle from its contraction. In fibrillation a constant storm of impulses beats on the ventricle, it has no longer time to recover from its contractions, and the previous debility is aggravated. In addition, the smaller efficiency of the heart in this rhythm is shown by the marked fall in blood pressure, and this must further tend to impair the hard-pressed heart.

The view I would present is that the anomalous reaction of digitalis arises from malnutrition of the heart primarily, but that this state of malnutrition is exaggerated by the demands made on the heart in auricular fibrillation, which thus contributes to the debility and leads to the anomalous reaction secondarily.

In some cases of well-marked auricular fibrillation digitalis has little effect in slowing the pulse, and in these the condition of the heart is less serious. Here there is unquestionably a certain degree of malnutrition, but the ventricle is protected by imperfect conduction from the mob of impulses from the auricle, and the extreme malnutrition which accompanies the very rapid pulse of typical auricular fibrillation is not developed. Digitalis, therefore, does not produce the anomalous reaction.

In the account I have given of the action of digitalis in auricular fibrillation the effective action is the blocking of impulses from the auricle. Another result of digitalis on the animal heart is the increase in the strength of contraction. Does this play no part in the improved efficiency of the heart? This cannot be answered at present, as we have no means of measuring accurately the contraction of the human heart. Undoubtedly the movement is stronger, but this may be due to the slower beat, which allows of a better recovery in the period of rest. In the perfused animal heart the systolic increase occurs at least as soon as the lessened conduction, and this seems evidence in favour of the improved circulation in patients also depending in part on the increase of systole. But the argument, I admit, is not convincing, since in perfusion experiments the dose of digitalis is necessarily larger than that used in man in order to bring on the action within the time-limits of an experiment.

THE TREATMENT OF SOME COMMON WAR NEUROSES.

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THE war neuroses with which we are concerned are those in which the patient suffers from some objective disorder such as paralysis, loss of speech, &c., without showing any signs of organic change in the central nervous system. These disorders often occur as the result of mental and physical exhaustion, violent explosions, &c., and they often constitute a very serious disability. They form a well-defined group which is readily distinguished from the neurasthenic and psychasthenic conditions where the patients have subjective complaints, headaches, feelings of exhaustion and depression, and very little in the way of physical signs; at the same time it is a difficult matter to find a suitable name for them. Were it not for the stigma attaching to the word, one would not hesitate to class them as hysterical. However, a diagnosis of hysteria is often held to mean that the patient has nothing the matter with him and requires no treatment. This is manifestly absurd in the case of a man who has been stone deaf for months; his disability is real enough and is in urgent need of treatment. As a rule the difficulty can be overcome by speaking of the disorder as functional rather than hysterical. However, the objection to the term functional is that it covers too wide a field. It applies to any condition which has no demonstrable organic basis, and it would include such disorders as neurasthenia and even epilepsy. We need some name for the neurosis which results in the production of objective signs simulating those due to organic disease, and for the present hysteria is the only term we can use. Babinski has coined a word, pithiatism, to take its place, but the word has not yet won acceptance and for the present we have been forced to adhere to the term hysteria in spite of its manifest disadvantages.

The object of this paper is to describe a method which we have found to be extremely useful in dealing with this type of war neurosis. It has been applied in upwards of 250 cases which have included all the most common types of hysterical disorder; we have records of 82 cases of mutism, 34 of deafness, 18 of aphonia, 37 of monoplegia of the arm or leg, 46 of paraplegia, 16 of hemiplegia, and 18 of disordered gaits not associated with organic change. The majority of the cases have been of several months' standing, but in spite of this the treatment has been almost immediately successful in at least 95 per cent. of the cases in which it has been applied.

The method is certainly not new, indeed it is probably employed in some measure by all who have had much to do with functional disorders, and recently several French neurologists have called attention to its value in the treatment of military cases.[1] However, very little reference has been made to it in recent English literature, and it is not easy to find any comprehensive account of the treatment of disorders of the hysterical type in the average text-book of medicine or even of neurology. At most we find a few lines devoted to the subject of treatment, and we are left with the impression that our task is at an end when we have succeeded in establishing the diagnosis. In war-time this is obviously not enough: adequate treatment is essential, and it will make all the difference between a useless burden to the State and a useful civilian or even a useful soldier.

It is quite true that a correct (or rather a confident) diagnosis is the first step. Indeed, the most important part in the treatment of a functional case consists in making up one's mind that the case is functional. To do this presupposes a knowledge of the signs of organic nervous disease

[1] Vincent: Le Traitement des Phènomènes Hystériques par la Ré-éducation Intensive, Tours, 1916. Babinski et Froment: Hystérie-Pithiatisme, &c., Paris, 1917. Rosanoff-Saloff: Considérations Générales sur la Camptocormie. Nouvelle Iconographie de la Salpêtrière, 1916-1917.

and the points of distinction between functional and organic disorders. However, these have been described often enough, and it is our impression that failure in dealing with these cases is as often due to inadequate treatment as to incorrect diagnosis. For this reason we have dealt with the subject of treatment in some detail and have not attempted to discuss points of diagnosis.

The method to be discussed has the advantage that it does not require any special experience (other than that needed to establish the diagnosis), and only demands a certain degree of confidence on the part of the operator. When properly carried out it is extremely rapid and almost invariably successful, even in cases which have been treated by other methods for months or years without result. The method has its limitations, and in particular it does not apply to the exhausted, neurasthenic type of patient who complains of headache, insomnia, &c., and has no physical symptoms, but only to that type of neurosis where the disability is some objective symptom, paralysis, loss of speech, &c.

The Aims of Treatment.

The different forms of treatment in vogue can be best understood by considering the mental characteristics of patients suffering from this form of neurosis. Though it may seem unjustified to make a psychiatric grouping of these cases, yet there are certain mental abnormalities which are present to some extent in nearly every patient. Indeed, anyone visiting hospital wards where functional and organic cases are treated together cannot fail to be struck by the great difference in the mental outlook of the two classes. The chief phenomena underlying the hysterical type of mind are weakness of the will and of the intellect, hypersuggestibility and negativism. The majority of patients are below the average normal intelligence as judged by the Binet-Simon scale, and others who are more highly equipped prove to have an unstable history either personally or in the family. Their hypersuggestibility is shown by the mode of production of their symptoms and by the ease with which the physician can suggest such conditions as anæsthesia, contraction of the visual fields, &c. At the same time there is a pronounced element of negativism which may amount to a mere inertia or to an active, but not necessarily a conscious, resistance to the idea of recovery. Conditions of negativism are often seen on attempts at movement when the antagonistic muscles overact, when the patient moves backwards when he is told to move forwards, &c. The unconscious resistance is often well marked and must be broken down before any results can be obtained. A combination of hypersuggestibility and negativism may seem to imply a contradiction, but the two are not difficult to reconcile. The patient has a fixed idea that he is dumb or paralysed and he resists all criticism of this idea, but outside this he responds to external suggestions much more readily than a normal person. Indeed, the fixed idea is developed as the result of auto-suggestions acting on a mind enfeebled by fear and emotional tension and this auto-suggestion becomes so strong that the patient resists all attempts to undermine his fixed belief.

These facts are important because they show that we must take into account two distinct conditions in considering treatment and prognosis. These are (*a*) the fixed idea which is giving rise to the functional symptom, paralysis, loss of speech, and so forth, and (*b*) the state of mind which has allowed this fixed idea to develop. The fixed idea can be treated successfully by suggestive methods and the patient can be restored to apparent health, but there is no reason to suppose that his mental instability will vanish. He will always be liable to develop hysterical troubles in moments of emotional stress and exhaustion, just as a man with a malformed chest will be liable to attacks of bronchitis. As Pitres said: "En réalité on nait hystérique, on ne le devient pas."

Psycho-analysis.

There is, however, one method of treatment which lays claim to the power of curing not only the hysterical symptoms but also the hysterical mentality. This is the method of psycho-analysis which is based on the idea that the hysterical type of mind is the result of a buried and unfulfilled wish dating from early infancy and concerned with some fundamental sexual longing. The idea was suppressed because it came into conflict with accepted notions of morality and conduct and its repression has led to a permanent state of tension and unconscious mental conflict. The hysterical symptom is supposed to be simply the emotional expression of the repressed desire or of some secondary conflict due to this desire. When the original infantile desire has been unearthed and explained to the patient, the repressed conflict will vanish and with it not only the hysterical symptom but also the state of mind which made this symptom possible.

It is difficult to avoid the belief that suggestion must play a large part in the cure of those cases where the treatment is successful, but it is not easy to judge of the merits of psycho-analysis because its tenets seem to call either for whole-hearted approval or else for whole-hearted abuse, and the middle course is deplored by both parties. However, the method has certain obvious disadvantages, even though we accept everything which has been said in its favour. It entails a considerable degree of training on the part of the operator, and a considerable degree of intelligence on the part of the patient, and it is a process which demands a great deal of time and individual attention. Indeed, the course of treatment may run into years if a serious attempt is made to cure the hysterical mind by purging it of all the accumulated filth of a lifetime; and if the analysis is not carried through as thoroughly as this the state of tension will remain in some degree and the treatment will have little advantage over the much more rapid methods which are concerned only with the alleviation of the immediate symptoms. Whether the result would justify a lengthy psycho-analysis is another matter, but in any case the time at our disposal is not unlimited, and for this reason alone the treatment is best left to special hospitals dealing with specially selected cases.

Treatment of Symptoms.

We may pass on, then, to consider those methods of treatment which aim only at relieving the functional symptoms and do not profess to give the patient a new mind. There are three principles involved in all these methods—namely, (1) suggestion, (2) re-education, and (3) discipline. The aim of suggestion is to make the patient believe he will be cured, and to lead him on from this to the belief that he is cured. Re-education brings the disordered function back to the normal by directing it until the bad habit is lost, and disciplinary treatment breaks down the unconscious resistance of the patient to the idea of recovery.

One might add a fourth line of treatment, which consists in adopting the attitude of Mr. Micawber and waiting for something to turn up. Probably this course is often adopted because there is some doubt as to the diagnosis. When it is uncertain whether a paralysis is functional or organic it is perhaps natural enough to leave it alone in the hope that time will show the difference. Fortunately, a certain number of functional cases do recover when left to themselves, but a large number do not, and expectant treatment may keep a patient for six months in hospital when more vigorous measures would have removed his symptoms in a week. Moreover, the atmosphere of a hospital is distinctly enervating and a functional case is rarely the better for a prolonged stay in the wards even though the symptoms may have improved.

Hypnotism.

As an example of a process which aims at curing by pure suggestion we may instance treatment by hypnotism. The treatment consists in reducing the patient to a state of mind in which his critical faculties are in abeyance and then suggesting verbally that his disability no longer exists. Most hysterical patients, being hyper-suggestible, are very easy to hypnotise lightly. They will readily accept the idea that they cannot open their eyes or move their limbs and they will comply with any suggestion which does not relate to their disability. Unfortunately they are not nearly so tolerant when the suggestion touches their fixed belief that they cannot speak or that their legs are paralysed, and it requires a far greater ascendancy on the part of the operator before they will agree to suggestions which are curative and not merely ornamental. One has only to be hypnotised to realise this state of mind. Unimportant suggestions are readily accepted, but anything which runs counter to one's favourite prejudices is simply dismissed as absurd. With a patient who is intelligent and anxious to get well hypnotism may be extremely successful, and it is certainly of great value in the treatment of subjective troubles such as

insomnia, fighting dreams, &c.,[2] which can scarcely be classed as hysterical. However, in the majority of functional cases where the resistance is at all marked our limited experience of the method has led us to believe that it is slow and uncertain in comparison with vigorous suggestive treatment and re-education.

Isolation.

As an example of treatment in which the disciplinary element is very much to the fore we may instance the use of strict isolation in hysterical cases. This supplies the needful stimulus to recovery by making the patient's illness a dreary and unprofitable business instead of a source of pride and satisfaction. For this reason it is extremely useful in cases of functional tremors and pseudo-chorea where the patient becomes quiet as soon as he is deprived of his audience. It is not suggested that isolation acts in this way in every functional disorder. The frightened, exhausted neurasthenic is often much happier when left to himself with nothing to disturb him, and it would be absurd to regard isolation as a disciplinary measure in such cases. But in those cases where disciplinary measures seem to be indicated we doubt if isolation is an advisable form of treatment. It may eventually force a patient to release his claim to a supposed disorder, but the process may take some time and is rarely as effective as a little plain speaking accompanied by a strong faradic current. Moreover, eight hours' rest out of the 24 is, to our mind, quite sufficient, and extension of that time in one who has no indication of physical illness is more liable to do harm than good. The disciplinary element may be assumed to enter into any form of painful suggestive treatment; it is often unnecessary, particularly in those cases where the disability is irksome enough by itself and the patient is anxious to get well; but in many cases it is a very important part of the treatment since it is the only certain means of breaking down the patient's resistance to the idea of recovery.

Persuasion.

Under the heading of re-education we might include the method of simple persuasion in which the patient is convinced by logical argument that his condition is not so serious as he supposes.[3] The difficulty with this form of treatment lies in the fact that a patient of average intelligence does not easily realise that his physical disability is due to a mental and not to a physical disorder. If an attempt is made to explain the real state of affairs to him he is generally left with the impression that he is suspected of malingering. It seems only natural to him that his cure should be brought about by some physical means, and therefore he will respond to some simple suggestive measure when persuasion or re-education would leave him untouched. In certain cases, notably in mutism and aphonia and in the spastic type of paraplegia, a rapid re-education is often quite enough by itself, but as a rule the patient will have greater confidence if he has received some preliminary suggestive treatment.

Suggestive Treatment and Re-education.

For this reason the method which we have finally adopted consists in a very brief suggestive treatment followed by rapid re-education, which is continued, if possible, without a pause until the normal function is entirely regained. The details will be discussed in dealing with the different functional manifestations, but there are certain general considerations which hold good in every case.

The suggestive treatment may take any form, but it is essential that the patient should be convinced that it will produce an immediate recovery. In untreated cases there is rarely any difficulty in this, and the conviction can be strengthened by using a form of treatment which will be capable by itself of evoking some part of the function which is temporarily in abeyance. For instance, a case of mutism may be cured by tickling the back of the mouth so as to induce reflex phonation. The patient is compelled to make a noise, and the fact that he has done so will convince him that the treatment will be effective. In the same way a strong electric stimulus will produce a sensation and motion in a limb which is supposed to be anæsthetic and paralysed, and this in itself will be enough to convince the patient that he is on the road to recovery. Occasionally this form of treatment has been tried before and has failed because the operator had not enough confidence in the method. In this case it is, of course, useless to repeat the same procedure, and we must fall back on some other form of treatment in which the patient will have greater faith.

The simplest form of suggestive treatment to apply is the faradic current. The therapeutic uses of electricity are still mysterious enough to the layman, and nearly every patient is willing to accept the suggestion that some form of electricity will cure him. The current can be made extremely painful if it is necessary to supply the disciplinary element which must be invoked if the patient is one of those who prefer not to recover, and it can be made strong enough to break down the unconscious barriers to sensation in the most profound functional anæsthesia. The only difficulty arises when the patient has already been subjected to a long course of electrical treatment without result. It often happens that a patient, either from mistaken diagnosis or mistaken ideas of treatment, has been given daily applications of some innocuous form of electricity in the belief that the electricity by itself will do all that is necessary. Such treatment, unaccompanied by the necessary suggestions, is generally quite useless in a functional case, and, as a rule, the only result is to accustom the patient to electrical stimuli and to foster the idea that his case is hopeless. It is easy to satisfy one's self that in these cases the sole value of electrical treatment lies in the suggestive effect it can be made to produce. We have watched a nurse administering the treatment to a paralysed limb, rolling the electrode up and down, sometimes with eyes shut and sometimes with eyes open, to say nothing of an occasional yawn. Needless to say, the patient remained paralysed, and the only result was so much current wasted. On the other hand, the same patient given exactly the same form of electricity with persuasion recovered completely in a few minutes.

When the patient tells us that he has already been treated by electricity it is as well to find out whether the treatment was painful or not. If it was not, the patient will generally yield at once to painful faradisation with a wire brush after he has been informed that this kind of electricity is far more potent than any he has had previously. If this, too, has been tried before, the suggestive treatment must take an entirely different form. As an instance of this we may quote the case, recently treated by one of us, of an officer who had a functional paralysis of the arm which had persisted for two years in spite of prolonged treatment by hypnotism, psycho-analysis, rest, massage, anæsthesia with ether, and electrical treatment which had included several extremely painful applications of electricity to the arm. He knew something of the functions of the brain and took a great interest in his condition, which he was prepared to discuss exhaustively. He was told that he had come to be cured, and that for the present he must be content with this; the nature of the cure would be explained to him afterwards. Without any further discussion the motor areas of the cortex were mapped out roughly, the measurements being repeated aloud to impress and mystify the patient. He was told that as soon as the shoulder area of the cortex was stimulated by faradism he would be able to raise his shoulder and that the rest of the arm would recover in the same way. A very mild faradic current was applied for a few seconds to the scalp, and he was then ordered to move his shoulder. He did so at once, and in a few minutes the whole of the paralysis had disappeared and he could raise 30 pounds. We believe that the success in this case was due in a large measure to the fact that the patient was not allowed to discuss his case or to criticise the proposed treatment. The value of this will be pointed out immediately.

Whatever form of treatment is employed, the patient must be convinced that the physician understands his case and is able to cure him. This idea should be fostered from the moment the patient enters the ward. The case is investigated as briefly as possible, and each physical sign is accepted as perfectly normal in the circumstances, and not as in any way interesting or obscure. The best attitude to adopt is one of mild boredom bred of perfect familiarity with the patient's disorder, and if the case has to be exhibited to anyone else it is shown not as anything unusual, but as a perfect example of the type of case which is cured in five minutes by appropriate treatment. After the examination the patient is met with the absolute assurance that

[2] Cf. Hurst: Medical Diseases of the War, 1916.
[3] Dubois: Psychic Treatment of Nervous Disorders.

he will be cured as soon as the physician can find the time to treat him. He is told that he will not need to stay in hospital for more than a few days, and that he can write and inform his friends of this. It is usually necessary to find out what treatment the patient has had before to avoid the risk of repeating a procedure which has already been tried and found wanting, but apart from this it is better to avoid discussing the case and the methods which will be adopted to cure it. The barest statement should suffice, and the patient should be silenced at once if he attempts to air his own views on the subject. An argument in which the physician does not seem perfectly sure of his ground is likely to weaken his authority at the moment when it should be absolutely unquestioned, and an air of complete assurance is far more convincing than the most elaborate reasoning.

The treatment is best carried out in a special room set apart for the purpose, where there will be nothing to distract the patient's attention. As soon as the least sign of recovery has appeared the re-education is begun. The patient is given no time to collect his thoughts, but is hurried along by a mixture of persuasion and command until the disordered function has completely recovered. The patient is never allowed any say in the matter. He is not asked whether he can raise his paralysed arm or not; he is ordered to raise it, and told that he can do it perfectly if he tries. Rapidity and an authoritative manner are the chief factors in the re-educative process, and in every case an effort should be made to produce complete recovery before the patient goes back to the ward. If the treatment has to be discontinued before recovery is complete the patient should be assured that he will be quite well in 24 hours and the re-education should be continued as soon as possible.

There are many details which are best considered in connexion with particular hysterical symptoms, and therefore we shall describe the most common affections in which the suggestive method is pre-eminently successful. The most common disorder is the complete or partial loss of a normal function, and the most common functions to be lost are those concerned with hearing and speaking and with the sensation and motion of the limbs.

Deafness.

As a rule, the patient is stone-deaf and often dumb as well and there may be associated symptoms, such as loss of vibration sense in the bones of the skull. The patient is told in writing that he will be cured in five minutes by electricity. The suggestive effect may be enhanced by the use of a darkened room, a head mirror, and so forth, but the essential treatment consists in applying a strong faradic current to the side of the head or to the external auditory meatus. The patient is informed that as the feeling comes back the current will appear more and more painful, and that in a very short time he will be able to hear the tick of a watch pressed against his ear. The current is applied for a few seconds at a time and increased in strength between each application. When the patient begins to show signs that the current is painful he is told that the feeling is returning and that he will soon hear perfectly. A watch (or a tuning-fork) is pressed closely against his ear between each application of the current and in less than five minutes he will begin to hear it. After a few more applications of the current he will be able to hear the watch at a distance of a foot or more. Sometimes he is able to hear the ticking of a watch, but is unable to interpret what is said to him. He is then re-educated, beginning with the vowel sounds, then with words of one syllable, then two, and so on, until he can hear perfectly. If the other ear has not recovered at the same time it is a simple process to restore the hearing to it in the same way. The cure is usually complete in less than ten minutes, though it may take longer in patients who have been stone-deaf for a year or more. In a series of 34 cases we have had only one failure. This was in a patient who had been deaf for over a year in spite of every kind of treatment. We saw him for a few minutes only and had no opportunity of continuing the treatment.

We have yet to observe any of the unpleasant after-effects which are said to arise from faradism in the region of the ear. It may produce a transient vertigo, and if it is to be effective it must be strong enough to be painful. The patient may object to this at first, but when the hearing has been restored to one ear he is always perfectly ready to have the same process applied to the ear which is still deaf.

One has sometimes to deal with cases where faradism has failed to produce a cure, The failure is due to lack of determination on the part of the operator; he is either ignorant of the fact that the condition is one which always responds to suggestive measures, or he becomes too easily fatigued to see the thing through to a successful issue. In such cases some other suggestive measure must be adopted; for instance, the application of tuning-forks of different sizes, beginning with those in which the vibrations are slow enough to be felt rather than heard, and reducing the size gradually until the fork can be heard rather than felt. The re-education can then be completed by shouting down a stethoscope. However, in untreated cases we have found the electrical method to be invariably successful in a few minutes.

Mutism.

When this is complicated by deafness it is, of course, natural to treat the deafness first, as this makes communication with the patient so much easier. As soon as he can hear the patient is told that his speech will be restored in the same way. A long pharyngeal electrode is used, and he is told to sound the vowel "ah" as soon as he feels the current. The soft palate and pillars of the fauces are stimulated, and as a rule he phonates loudly as soon as the electrode is applied; he is then told to repeat the other vowels, the letters of the alphabet, numbers, days of the week, &c., and he is soon able to enter into a conversation.

When mutism has existed alone it is often unnecessary to do anything more than tickling the back of the patient's mouth with a mirror or tongue depressor. This evokes some reflex phonation in the form of gurgling or retching, and the patient is then told to say "Ah." The process is repeated until he can do this naturally, and it is then a simple matter to make him sound the other vowels and to repeat the whole alphabet in an audible voice. In still milder cases the patient will phonate loudly when he coughs or gargles, and he can then be made to sound "ah" by gradually eliminating the explosive element of the cough. In some cases the soft palate appears to be anæsthetic, and the patient does not phonate when his throat is tickled. This difficulty can be overcome by applying a faradic current to the back of the throat. In a case which has been previously treated with electricity in this way some new form of treatment must be devised and every effort must be made to strengthen the suggestive effect. However, the condition is one which tends to clear up spontaneously, and most cases respond at once to the simplest suggestions.

The first signs of voluntary phonation must be followed up immediately, and the patient must be given no respite until he can speak perfectly. He is, of course, instructed beforehand that the treatment will effect a complete cure, and he must not be allowed to go back to the ward whispering or stammering, even though he may regard this as an immense improvement on his former state.

Aphonia.

The patient is able to whisper, but cannot phonate properly. This may exist as a stage in the spontaneous recovery of a mute, but it is most often an after-effect of laryngitis. The patient can be made to phonate by tickling his throat or by coughing or gargling, and the whole process is simply one of re-education, which is usually complete in a minute or less. It is rarely necessary to use electricity.

Stammering.

A tendency to stammer sometimes shows itself during the re-education of a mute. It can be checked at once by re-education and simple suggestive measures, such as faradism applied to the back of the neck, but if it is not checked as soon as it appears it may become much more intractable. For this reason patients who have been allowed to recover their voice spontaneously may develop a bad stammer which takes some time to clear up.

Blindness.

We have no direct experience of hysterical blindness in both eyes in military cases. Cases of monocular blindness or of defective vision, with no refractive error and no changes in the retina, are probably more often the result of malingering than of hysteria. Treatment by strong faradism in the region of the supra- or infra-orbital nerves is successful in either case, but it is generally found that the alleged defect can be remedied by a little plain speaking.

Hysterical affections of the other special senses and of the cranial nerves are relatively unimportant, and there is usually no difficulty in devising a suitable form of suggestive treatment.

Paralysis of the Upper Limbs.

Cases of paralysis of one arm are very common and very easily curable. As a rule they occur after some slight wound or bruise which has necessitated the use of a splint. The treatment can best be described by considering a typical case. The patient has received a slight wound of the forearm some months ago, and ever since his whole arm has been useless. He can move it slightly at the shoulder by exerting what appears to be a superhuman effort, and he can occasionally flex the fingers through a small angle. There is complete anæsthesia of the hand and arm, ending in a line drawn horizontally round the elbow. The patient does not necessarily complain of this anæsthesia and there may be no sign of its existence until it is suggested to him by the physician, but it is often useful to elicit it in view of the subsequent treatment. The diagnosis is obvious at once from the absence of wasting, the distribution of the sensory loss, and the involvement of the whole arm after an injury which could not possibly have affected the upper arm and shoulder.

The patient is told that he is very lucky to have come off with such a slight injury, and that his arm will be set right in five minutes by the application of a special form of electricity. He is made to sit on a large pad electrode connected with an induction coil, the other terminal being connected with a wire brush. He is informed that the first effect of the current will be to bring back the feeling in the forearm, and that as the feeling returns the power will return with it. A fairly strong current is turned on, and the wire brush is drawn downwards over the forearm from the elbow to the wrist. After a few applications the patient is told that he can now feel as far down as the wrist, and he is tested with a pin to convince him of the truth of this. If he cannot feel the pin-prick, the current is increased in strength until he can do so. The same process is applied to the hand until this, too, ceases to be anæsthetic. The improvement is pointed out to the patient and he is told that as the feeling has now returned to his arm it will be a very simple matter to restore the power of movement.[4] After a few touches with the electrode designed to produce contraction in the muscles he is told to move the arm. He will do so at first in a hesitating manner with every appearance of great effort, but this will be quite enough to convince him that the power is really returning. The rapid re-education follows at once. He is given no time to think, but urged to move the arm more and more strongly, to grip the physician's hand, to flex and extend the elbow, &c., and the pressure is not relaxed until the whole limb has returned to its normal vigour. If the improvement comes to a standstill before recovery is complete, the faradisation is repeated with stronger and stronger currents. Rapidity and an air of authority which will brook no denial are usually quite enough without this, and if once the recovery is complete there will be little fear of a relapse. If the patient's manner suggests that he is likely to relapse as soon as he leaves the hospital, he is told that this is very unlikely, but that if it should occur he should report sick at once and come back for treatment with a current far stronger than that already used. Needless to say it is rarely necessary to carry out this proposal.

In untreated cases a very mild current is all that is required, but if, as often happens, the patient has been treated before with some form of electricity without suggestion it is better to begin with a current strong enough to be painful. If this has already been tried without success, it is better to adopt some entirely different line of treatment, as in the case of the officer already quoted.

Paralysis of the Lower Limbs.

Cases of monoplegia are treated in the same way as paralysis of one arm. In paraplegia the treatment depends to some extent on the type of paralysis. As a rule, a recent case of paraplegia due to "shell shock" or burial belongs to the flaccid type without exaggerated reflexes. If this is allowed to recover slowly it merges into the spastic variety with pseudo-clonus, exaggerated knee-jerks, and rigidity. Passive movements are resisted strongly, and when the patient attempts to put the flexor group of muscles into action the extensor group contracts at the same time and a condition of increased tone and clonus is set up. The condition is, of course, due to a disordered mental process and not to organic diseases in the central nervous system, and we may regard it as akin to the states of negativism which occur in dementia præcox. Whatever the explanation may be, the fact remains that this condition is very often seen in cases which have been badly treated, and in such cases it is often difficult to eradicate completely in a short time. The spastic condition often occurs during the re-educative treatment of a case of flaccid paraplegia, but it is then of little consequence, as the patient is allowed no time to acquire the habit.

In cases of flaccid paraplegia it is as well to restore sensation and movement to the limbs by treatment with faradism before the re-education is attempted. Otherwise the patient will simply collapse when set on his feet. In the spastic type it is often better to hold the suggestive treatment in reserve and to do as much as possible by re-education alone. The patient is told that all he needs is a little confidence in his legs, and he is then set on his feet and induced to walk. At first the greater part of his weight is taken by the physician, but in a few minutes he is made to bear his own weight and to walk with less and less assistance and more and more rapidly.

Certain details in the treatment deserve mention. It is perhaps unnecessary to insist that slippers without heels are not the ideal form of footgear when the patient is learning to walk. They encourage a shuffling gait, and frequent halts are necessary to readjust them. Indeed, the use of slippers and a stick would perpetuate a limp in any patient who had the least tendency to a neurosis. The re-educative treatment of a patient who cannot walk properly is best carried out in a large empty room, a corridor, or out of doors. He will not feel unduly self-conscious as he would do in a ward full of patients, and he will have nothing to hold on to. If there is no alternative between walking and falling down the patient will usually find himself able to walk (once he has passed the earliest stages in re-education), but if a middle course is offered in the shape of a chair or a bed to which he can cling he will at once seek safety in this, and the more he is allowed to use his hands to support himself the less likely will he be to trust to his legs. At first the patient will seem to be continually on the verge of losing his balance, but, as a rule, there is little fear of this, and the idea should not be encouraged by supporting him whenever he seems in the slightest danger of falling. It is best to allow him as little assistance as possible. To begin with he should walk arm-in-arm with the physician, then facing him and holding his hands, then holding one hand only, and finally with no support at all. A fall should be avoided as far as possible, but it is of no great consequence if it does occur, for the patient will not be taken unawares, and will be unlikely to hurt himself. A fall should on no account be taken as an excuse for resting; it should be treated as a matter of course, and the patient should be made to continue his efforts until he can walk without falling.

If possible the patient should not be returned to the ward until he can walk without assistance of any kind, and on no account should he be allowed to use sticks or crutches, even though he has been paraplegic for six months. Until he has recovered completely he should not be allowed to walk except under the direct supervision of the physician; otherwise he will be liable to develop a functional gait or a limp, and a further re-education will be necessary. As in every functional disorder, it is extremely important to produce a rapid improvement during the first treatment and to continue this at the earliest possible moment until recovery is complete.

Precisely the same form of treatment applies to the patient with functional "rheumatism," who walks with bent and trembling knees and a couple of sticks, functional hemiplegia, functional sciatica, and functional gaits of all kinds. As a rule it is found that the more serious the disability the easier will it be to cure; a case of complete

[4] The layman seems to consider that loss of power and loss of feeling are inseparably connected. One of us asked 100 persons of average intelligence whether they would lose the sensation in their hand if for any reason it became paralysed. Due care was taken to avoid suggesting the answer, but in every case they replied in the affirmative. This idea may account for the development of anæsthesia in functional paralysis, and it is easy to see that a patient will accept the suggestion that his paralysis will recover when his anæsthesia has been cleared up by electricity.

flaccid paraplegia will often walk perfectly after an hour's treatment, whereas a man with a slight functional limp will need a re-education lasting for days or even weeks.

Tremors, Fits, &c.

We have given a detailed account of the treatment of deafness, mutism, and paralysis because these cases are so easily curable with rapid suggestive and re-educative measures. They are all due to the absence or diminished activity of a normal function, and the treatment has only to recall this function to the patient's consciousness. Fortunately these cases form a large percentage of the hysterical war neuroses. There is, however, a group of cases in which the treatment is often successful, but by no means invariably. These cases depend not so much on the absence of a normal function as on its excessive and disordered activity. Functional tremors and incoördination, choreiform movements, and tic-like spasms are examples of this class, and we might include hysterical fits and even the stammering and explosive type of speech. Functional tremors are sometimes very easily cured by a little suggestive faradism, and fits may be stopped temporarily at least by suggestive measures. The patient is induced to have a fit by assuring him that he will do so when an electric current is applied to his forehead, and the fit is checked by supraorbital pressure or faradism to some other part of the body. The patient is then told that his fits are not epileptic and that they have been cured. As a rule he will have no more fits as long as he is in hospital, but he may relapse outside, and we know of several cases where this has happened. Indeed, the method is probably more valuable as an aid to diagnosis than to treatment.

Involuntary movements and hysterical chorea may yield to rapid suggestive methods, but isolation is a more reliable form of treatment, although it is at the best a slow process.

Functional contractures deserve a place by themselves. When they are truly hysterical they will usually yield at once to suggestive faradism with a moderately strong current. But it is sometimes extremely difficult to make certain that the condition has not some organic basis. Babinski and Froment have collected a number of cases described as reflex nervous disorders and having an organic origin, although they show a superficial resemblance to the hysterical contractures.[5] These cases are generally intractable, and so far no line of treatment has been found to have much effect on them. We have seen four or five cases which could be included in this category, and in them suggestive treatment was certainly quite ineffective.

For the sake of completeness we should mention a method of suggestion which is often employed with good results. This consists in anæsthetising the patient and making the necessary suggestions to him as he is going under or coming round from the anæsthetic. To a certain extent the process may be compared with hypnotism in that the suggestions are made at a time when the critical faculties of the patient are dulled; but the main advantage of the method lies in the fact that in the stage of excitement the patient will struggle, cry out, &c., and that he will often regain consciousness whilst he is in the act of moving the arm which was formerly paralysed or using the voice which was formerly dumb. The method demands an anæsthetist who will be able to produce a long excitement stage, and the results are to some extent a matter of luck. This furnishes the chief objection to the method, for if it fails the patient will have some excuse for taking a gloomy view of his case, and he will be naturally sceptical of less heroic methods. However, we have little direct experience of the method, as we have not found it necessary to employ it.

Prognosis and After-treatment.

The treatment of a functional case does not end at the moment when the disability has been cured, and we have always to determine how much the patient may be safely called upon to do without fear of a relapse. This will depend on how far the underlying mental condition is a permanent state and how great a strain was necessary to lead to the development of the symptoms. If the patient gives a history showing pronounced mental instability or previous functional troubles before the war, and if he has lost the use of his legs after a few days in the trenches, it is clear that he will never be of the least value at the front, and he is probably best employed in a labour unit at home or on sedentary work. If he has served several months in the fighting line, and has then lost his voice after a week without sleep and a severe bombardment, he will often be perfectly fit again after a short rest, and he will show only the slightest signs of the hysterical temperament. He may relapse under an equally severe strain, but if his cure has been rapid and complete on the first occasion he will have less reason to fear a relapse and to regard a temporary loss of speech as a serious and intractable condition. It is another matter if he has been allowed to remain dumb for six months in hospital, for in this case he will have every reason to regard himself as the victim of a severe form of "shell shock," and he will probably be quite unfit for service in the fighting line.

In all cases a thorough examination of the past history and mental condition must be made before we can decide what form of service will be most advantageous to the patient and to the nation. In the more intractable conditions—tics, convulsions, &c.—the patient may be able to do some useful work with a labour unit, but it is often better for all concerned to return him to civilian life.

In conclusion, we wish to express our thanks to the medical and surgical staff of the National Hospital, Queen-square, and to Lieutenant-Colonel W. Turner, officer in charge of the Connaught Hospital, Aldershot, for permission to publish these notes.

[5] Babinski et Froment: Hystérie-Pithiatisme et Troubles Nerveux d'Ordre Réflexe. Masson et Cie. 1917.

CHYLO-HÆMOTHORAX FROM WOUNDS INVOLVING THE THORACIC DUCT.

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WHEN a fluid obtained by exploratory puncture of the chest seems to be "frankly purulent" to the naked eye one is apt to assume that this appearance is sufficient proof that an empyema is present and that rib resection is justified without any further microscopic study of the specimen.

In nearly all such cases the presumption that infection exists is true, but occasionally a rare example may be encountered in which the thoracic duct has been wounded in the chest without the associated injuries being at once fatal, and then the milky chyle will leak into the effused blood and produce a combination mimicking that of a pyo-hæmothorax so closely that most surgeons would be deceived by it.

The first case quoted in this paper was one in which the error was not avoided and the medical officer was misled by the appearance of the fluid into performing an operation for drainage of the pleural cavity. The patient recovered, but his convalescence was dated by months instead of by weeks in consequence of the mistake. In the second case the character of the fluid was guessed to be chylous and proved to be so before anything was done. But unfortunately the effusion had been infected by the shell fragment which caused the wound and drainage was unavoidable and was followed by death.

The error can only be avoided by holding fast at all times to the general clinical rule: "That *drainage* of a chest after gunshot wound should never be undertaken except upon bacteriological proof of infection in the fluid withdrawn at exploration, or upon the recognition of an offensive smell in the latter." The naked-eye appearance of any fluid may be entirely misleading, as hopelessly, though not so frequently, as is the clinical judgment of a chest wound before exploration is made.

At base hospitals these cases of chylo-hæmothorax must be very few. The two that are described from our own experience did actually occur in the same hospital within a month of one another, but they are the only two that we have seen out of a total of 600 samples of hæmothorax fluid that were examined by us in the laboratory; and this laboratory figure covers a clinical experience of far more than a thousand chest wounds. But the occurrence of a chylous effusion would not appear to be so rare as this, if it were expressed as a percentage of all large effusions on the

left side of the chest. The possibility is certainly a practical point which deserves to be borne in mind when dealing with big traumatic effusions in the left pleural cavity.

Diagnosis.

There are several points which characterise a chylous leak into a hæmothorax.

1. The collection of fluid is on the left side.

2. The effusion continues to increase steadily and rapidly on the third and fourth day, causing progressive cardiac and respiratory embarrassment. Such an increase is rarely seen with an ordinary sterile hæmothorax, where the bleeding is either fatal or ceases in the first 24 hours. It may, however, occur as the result of infection of a hæmothorax. A chylous effusion, even if infected, will not be accompanied by high fever because the patient's nutrition is profoundly impaired; whereas sepsis in a simple hæmothorax generally causes a high temperature.

3. Exploration discovers a fluid which appears to be heavily loaded with pus. If this appearance is seen in a large collection of fluid early in the first week after the wound, it is almost certain that it must not be ascribed to pus, because the processes of pleural suppuration following upon sepsis in a hæmothorax take many days before they can produce an abundant pleural exudate.

4. The fluid is opaque, and its colour will vary from red to pink or creamy-grey in accordance with the proportion of commingled blood. In the two cases that are described below the fluid did not clot after withdrawal from the chest, presumably because its fibrin was being separated by coagulation within the chest as fast as the chyle escaped from the duct.

5. On centrifugalisation a deposit of red cells is thrown down, leaving a supernatant opaque milky fluid whose creamy-white colour contrasts brilliantly with the red band below. Under the microscope the milky fluid is seen to be filled with small fat globules, which are immediately soluble in ether. A few mononuclear leucocytes are scattered among these fat globules.

Anatomy of the Lesion.

The cervical part of the thoracic duct, or one of its branches, has occasionally chanced to be injured in the surgical operations of civil life when extensive dissections are being made in the root of the neck. The records of such cases have been fully collected in a recent paper by E. Harrison.[1]

The intra-thoracic portion of the duct lies in a field that is less exposed to surgery, and its lesions in civil life are for the most part those of spontaneous rupture, which may occur when the duct is obstructed by the pressure of a malignant growth or by the chronic fibrosing inflammation due to filaria parasites. In such cases a collateral circulation is often fairly well developed before the rupture occurs, because the obstruction is slow in being established; and therefore the clinical picture differs from that caused by a wound suddenly severing a healthy duct which was the sole conduit for chyle from the visceral area to the venous system.

In the wounds of war-time the duct is no doubt often torn open by missiles that injure the chest; but its position is so closely related to that of the great vital vessels of the thorax that the bullet which can wound the duct is almost certain to kill by causing fatal hæmorrhage from the neighbouring blood-vessels.

Below the level of the fourth thoracic vertebra the duct is a target which a missile cannot reach without injuring in addition either the heart, the aorta, or the azygos veins. Above this level the duct passes outwards to the left, and it may take a path over the heads of the first three ribs or be displaced even further laterally. In this position the left mediastinal pleura comes into lateral or anterior relationship with it, while the origin of the left subclavian artery is immediately to the front. Here a ball may chance to pass between the vessels springing from the arch of the aorta and to cut the duct without injuring the great veins at the root of the neck.

The possible paths for such an injury may, perhaps, be several in number; but as a matter of experience, in each of the two cases quoted in this paper the track of the missile seems to have been the same, passing obliquely across the apex of the thorax, behind and under the subclavian artery and meeting the duct as it lay near the apex of the lung upon the vertebræ, or perhaps upon the heads of the ribs. This track is roughly parallel to the axis of the heart. It will permit the passage of a large projectile, such as a shrapnel ball, without associated fatal injuries. In our second case it appears likely that the shrapnel ball entering above the right clavicle had attained this path by passing through and splintering the body of a vertebra. It is a common and, indeed, it is the usual occurrence, for a missile to pass from side to side through the centrum of a vertebra without causing any symptoms of injury to the spinal cord. In the case of a double non-fatal hæmothorax, this is the path usually taken by the projectile concerned when it crosses in the upper two-thirds of the chest.

Treatment.

An intrathoracic wound of the duct is beyond the present skill of surgery for its repair. Case 1 shows that the fistula may close spontaneously in a few days. Increase of intrapleural pressure probably has some value in stopping the leak, for the chyle in the duct does not exert a high pressure, and therefore the volume of the effusion should be lessened by aspiration only when it is causing distress to the patient.

It is desirable that the prone position should be maintained in order to keep clots in contact with the apex of the chest. Fats in the food will increase the flow of chyle, but they will also help to give substance to any clot that may form. Whatever decision may be taken with regard to giving or withholding fats from the dietary, it is at any rate certain that they do not reach the patient's tissues so long as there is a complete leak from the duct, and therefore the sugars in the food must be increased in the attempt to maintain nutrition.

Case 2 was an example of a complete leak. Although the pleural cavity was infected, the patient showed a subnormal temperature that was below the limit of the thermometer, 95·4° F., every morning on the last eight days of his life, while it was continually subnormal on the last three days before that on which he died. His body wasted away with extraordinary rapidity. He did not suffer from the hunger or from the intense thirst that has been described by other observers as being so conspicuous in cervical cases, where the patient survived with a leak for a longer period. Very notable in this case were the huge masses of curdy yellow clot that progressively filled the pleural cavity as the fluid part of the effusion was daily drained away. These formed so large a deposit as to give the impression that had the effusion been sterile, and had the patient survived owing to a spontaneous closure of the fistula, it would have become necessary later to open the thorax and remove the clot in order to give the lung a chance of expanding.

We are indebted to the various medical officers concerned for their kind permission to publish these clinical histories of cases that were directly under their care.

CASE 1.—Sergeant P. August 8th, 1916: Wounded by shrapnel ball, which entered the chest immediately above the outer third of the right clavicle and lodged under the skin at the very apex of the left axilla near the posterior axillary fold. No hæmoptysis. No vomiting or difficulty with swallowing. Eighteen hours after this injury the patient walked a mile, and there was no suggestion of any damage to the spinal cord, though the right brachial plexus was slightly injured.

Fourth day: Subcutaneous emphysema of left side. Signs of small left effusion. Sixth day: Patient was sweating, cyanotic, and distressed; temperature swinging between 99° and 100° F. The effusion in the left chest had increased rapidly in the last two days, and in consequence of this accumulation the medical officer in charge suspected sepsis. Seventh day: Chest explored. A pink, opaque, creamy fluid was obtained, the character of which led to its being regarded on naked-eye evidence as undoubtedly purulent. Rib resection was at once performed. Much blood clot and a large quantity of apparently purulent fluid, estimated at about 80 ounces, were removed. Meantime the microscope had shown the exploration sample to consist only of blood and chyle, which separated on standing into a clean deposit of red cells below an opaque, creamy yellow fluid. Cultures subsequently proved this fluid to be completely sterile.

Eighth day: The resection wound was now completely closed by the surgeon in the hope that infection had not been introduced. Eleventh day: Physical signs of a large pneumothorax with complete collapse of left lung. Explored at left base; purulent fluid containing streptococci and a Gram-positive diphtheroid was found. The chest was opened again, air-tight drainage with a collecting flask being at first employed. The pleural fluid received in this flask was now simply purulent, and the leakage of chyle had completely ceased. The drainage at first was not satisfactorily arranged and the lung failed to expand well. Thirtieth day: Transferred to England. Still a very large empyema cavity, but patient was in good condition and had not lost flesh despite the heavy secondary infections that had been implanted on the originally sterile pleura.

The subsequent history was not fully ascertained, but ten weeks after the wound the patient was reported to be doing well.

[1] British Journal of Surgery, 1916, iv., 304.

CASE 2.—Sept. 15th, 1916: Wounded by fragment of shell which entered in the middle of the throat immediately below the thyroid cartilage. No exit wound. Fourth day: Admitted to base hospital. When seen a few hours later he was extremely ill and ot a grey cyanotic tint. Temperature 97·4° F.; pulse 120 and weak. Heart displaced out to right nipple, and physical signs of complete pneumo-hæmothorax on the left side. From the general appearance of the patient at this early date, and from the absence of fever, it was thought to be most probable that the condition was that of a simple air leak and not of a gas pneumothorax caused by infection. The chest was aspirated on the same day by Captain Thatcher, R.A.M.C., who withdrew 90 ounces of grumous grey fluid, the appearance of which at first suggested that it might have come either from the stomach or from the thoracic duct. There was no offensive odour and litmus paper proved the fluid to be alkaline. After standing in a test-tube a small deposit of blood cells fell out as a red band at the bottom, leaving a greyish-yellow, opaque fluid above. Microscopically the fluid was found to be chyle, with an excessive number of polymorphonuclear cells in the deposit and a few Gram-positive bacilli. Its appearance on first withdrawal and before the separation of the red cells by standing was very like that of an ordinary empyema fluid, though there was just enough difference in tint to raise a suspicion, in view of the experience from the preceding case, of its having been derived from some abnormal source.

Fifth day: Bacteriological culture from the fluid discovered a streptococcus as well as *B. perfringens*. The patient was still very cyanosed and another 40 ounces of fluid similar to that of the preceding day were removed by aspiration. In the evening part of a rib was resected. More of the same fluid was found and the surgeon met with a yellow clotted mass in the pleural cavity which he thought to be prolapsed omentum and hastily replaced. Actually this mass was clotted chyle, which ought to have been removed.

Eighth day: Patient said that he felt worse. He was wasting with great rapidity and looked marasmic rather than septic. Pulse very feeble, 104; extremities cold, and temperature remaining deeply subnormal, below 95·4°. There was a slight cyanotic flush on his cheeks. The patient's bed was almost soaked in chyle, which continued to pour abundantly from the drainage-tube in his left side in the intervals when it was not blocked by yellow masses of clot that had a slightly rancid but otherwise inoffensive smell. He was drinking freely but without notable thirst, and had no appetite, though taking sugar and bananas fairly well. There had been no difficulty in swallowing at any time, and there was no hæmoptysis after the first day.

Ninth day: Heart still displaced to the right nipple, and still some cyanosis, while there was now a considerable amount of purulent sputum. In the hope of relieving the cardiac embarrassment a large drainage-tube was used with a big rubber flap which was cemented on to the chest wall by a solution of dental rubber dissolved in chloroform. This gave an air-tight junction and suction was then applied by means of an automatic aspirating bottle, the drainage products being collected in an intermediate receiving flask. This saved the patient from the exhaustion which had been caused by the need for frequent redressing when the chyle was allowed to leak out freely into the bed, and a large quantity of fluid was collected within the next 24 hours. But the apparatus failed to expand the lung because the tube was continually being blocked by masses of coagulated chyle.

Eleventh day: Patient had steadily been growing weaker and he died quietly. On this last day the temperature, which for the three preceding days had been below 95·4°, rose to 97°.

The autopsy showed as follows. Entry wound: A small healed scar in the neck to the right of the middle line just below the level of the cricoid. Beneath this lay a small collection of pus which had caused superficial necrosis of several of the cartilaginous rings of the trachea. The missile had entered the trachea and passed out from it again through a wound on the left side a little lower down. Both of the wounds were septic but practically closed.

The track then ran behind the main vessels entering the neck, and perforated the pleural sac about 1½ inches from its apex. The small piece of shell was found loose in the pleural sac, a position which it had reached after passing posteriorly through the upper lobe of the left lung and tearing a track along the upper surface of the lower lobe. The wound of the thoracic duct could not be found, but the track of the missile proved that this wound must have been in some position near the apex of the thorax that was surgically inaccessible.

The pleural cavity was filled with great masses of sour-smelling clot that resembled buttery yellow curds, and were very light to handle. The clots contained innumerable large cavities, spaced like those of a Gruyère cheese, each of which held inoffensive gas and a little fluid smelling of butyric acid. There was no appearance of pus to be found, nor any unpleasant odour suggesting the ordinary proteolytic products of a gas bacillus infection.

The left lung was completely collapsed and showed the wound track described above. It had not re-expanded at all after rib resection, presumably because the drainage had been interfered with by the accumulated masses of clot. The heart still remained in a position of extreme displacement to the right; there was no pericarditis. Bronchitis was evident in the right lung, but there were no areas of collapse.

Inoffensive gas (hydrogen and carbon dioxide) and simple organic acids are the ordinary products of the growth of pure *B. perfringens* on carbohydrates. No satisfactory analysis has yet been made by pathological chemists to show whether *B. perfringens* can effect the decomposition of fats, so that we are perforce content to record the changes observed in this clotted chyle without attempting any further explanation of them.

DONATIONS AND BEQUESTS.—By the will of the late Miss Emily H. Mortimer the Royal Isle of Wight Infirmary at Ryde and the Royal National Hospital for Consumption, Ventnor, will each receive £1000.—The late Mr. W. H. Sidley, whose estate has been valued at £16,000, left such sum as may be necessary for the endowment of a bed in the General Hospital, Birmingham, and the residue of his estate in equal shares to the Queen's Hospital and the General Hospital, Birmingham.

THE MENACE OF MORPHINE TO CHINA.[1]

BY WU LIEN-TEH (G. L. TUCK), M.D. CANTAB.,
PRESIDENT OF THE CHINESE NATIONAL MEDICAL ASSOCIATION.

THE year 1917 will be historic as the one in which opium, the curse of China for 75 years, will be officially and finally banished from the country, for in this year the ten-year agreement made between Great Britain and China regarding its importation into China, including the last two seaports of Shanghai and Canton, will come to an end, so that even in the British Settlement of Shanghai the remaining opium shop will be closed by the month of March. The whole nation will rejoice at this happy termination of an awful vice, which once looked as if it might exterminate the Chinese race. That the drug is scarce may be ascertained by the fact that the present price in Canton is at least $15 per tael, with a tendency to rise. Except for some smuggling from Turkestan and Russia by way of Siberia very little opium will in future find its way into China, though the Government and Customs authorities will still have to exercise, in dealing with this enormously paying business, the greatest vigilance over unscrupulous people.

Morphine Statistics: British and Japanese Traders in Morphine.

I am afraid we cannot be so sanguine with regard to morphine, for up to the end of last year all statistics point to increased importation into China. The supply of morphine comes mainly from two firms in Edinburgh and one firm in London. The following table shows the declared exports of morphine from Great Britain alone:—

1912	.....	276,572 ounces,	equal in weight to	7½	tons.
1913	.....	406,154 ,,	,,	11¼	,,
1914	.....	504,020 ,,	,,	14	,,

It is estimated that the exports in the years 1915 and 1916 are at least 600,000 ounces for each year, equal to over 16 tons. Moreover, the normal importation of opium into Japan for medicinal purposes is only 10 chests a year, but the importation of morphine into that country in 1911 was 1½ tons; in 1914 this had risen to 12 tons—that is, 1 ton a month. There is a large firm in Japan which acts as agent for the manufacturing firm in London. In 1913 alone this agent in Japan imported 2½ tons of morphine by *registered post* via Siberia. The two other British firms exported 2 tons by the same method, and 1¾ tons came from Germany, making a total of 6¼ tons in 1913. So far it has been ascertained that neither Japan nor Germany has got the necessary plant to manufacture morphine on any large scale, and the alkaloid has come mostly from firms in Great Britain. Once arrived in Japan the morphine is usually made up into small packets or placed into small bottles, labelled in different ways—e.g., morphine, "white powder," "soothing stuff," "dreamland elixir," &c., and exported openly or smuggled secretly into China by way of Dalny, Antung, and Formosa. Almost every Japanese drug dealer or pedlar in Manchuria sells it in one form or another, and does so with impunity, because no Japanese can be arrested without complaint being first lodged at the Consulate. From these Japanese agents and sub-agents the drug may be passed on to disreputable Chinese who frequent the coolie depôts and inject a solution, usually very dirty, with a hypodermic syringe which may be made with glass, metal, or even bamboo. Rigorous imprisonment for two years is a common sentence for Chinese found with morphine in their possession, but the principal culprits often escape punishment.

The morphine habit was first brought into China by returned Swatow emigrants from Singapore and spread to other parts of Fukien. During my five years residence in Manchuria I have seen terrible havoc wrought upon the population by this drug. More than half of our regular jail-birds there show needle signs over their bodies, professional beggars found in the streets of Harbin, Kirin, Changchun, and Tsitsihar are victims of the habit, and thousands of poor people die in the large cities during the winter months, partly from cold but principally from inability to work on account of their morphine habits. From all sources I learn that the evil is spreading rapidly, and it is worse than opium

[1] A paper read before the Joint Medical Conference, Canton, January, 1917.

smoking. Enormous profits are made by the dealers in this illicit trade. The average wholesale price of morphine hydrochlorate in London is 10*s*. 5*d*. per ounce, but the Japanese pedlars sell it in China for £4 10*s*. to £5.

The profits made on 6¼ tons by the dealers in China in 1913 amounted to £840,000. Unless strong action is taken by our profession, as was done by us in the case of opium, the morphine evil will assuredly spread farther and render futile all our efforts in the direction of opium eradication. The question is, "What are we to do?"

The Hague Conventions with Regard to Opium, Morphine, Cocaine, and Allied Drugs.

Three Opium Conferences have already been held at the Hague—in 1911–12, 1913, and 1914. At the first a Convention was drawn up in which all the participating Powers (Great Britain, United States, China, France, Germany, Italy, Japan, the Netherlands, Persia, Portugal, Russia, and Siam) agreed to help one another mutually in restricting the evil effects of opium, morphine, cocaine, and allied drugs. At the Second Conference 44 out of 46 Powers of the world had already agreed to append their signatures to the Convention, and at the Third Conference the United States, the Netherlands, and China deposited their ratifications so as to act forthwith upon the articles of the Convention. Although the representatives of Great Britain were instructed at the Second Conference to declare on behalf of their Government their readiness to ratify, the matter has so far been delayed. In the meantime the war has put a stop to many things, but morphine continues to find its way into China. Two articles in the Convention signed on Jan. 23rd, 1912, deal particularly with morphine and allied alkaloids. These are:—

Art. 9.—The Contracting Powers will enact pharmacy laws and regulations so as to limit the manufacture, sale, and use of morphine, cocaine, and their respective salts to medical and legitimate uses only, unless such laws already exist. They will coöperate among themselves in order to prevent the use of these drugs for any other purpose.

Art. 14.—The Contracting Powers will apply the laws and regulations for the manufacture, import, sale, or export of morphine, cocaine, and their respective salts to (*a*) medicinal opium, (*b*) to all preparations (official and non-official, including the so-called anti-opium remedies) containing more than 0·2 per cent. of morphine or more than 0·1 per cent. of cocaine, (*c*) to heroin, its salts and preparations, containing more than 0·1 per cent. of heroin, (*d*) to every new derivative of morphine, cocaine, or their respective salts, or to any alkaloid of opium which, as the result of scientific research, shall be generally recognised as giving rise to analogous abuse or producing the same injurious effects.

If these articles had been put into operation, along with the rest of the machinery provided in the Convention, a great deal would have been done towards controlling the production and distribution of drugs of addiction throughout the world and restricting them to use for medicinal and legitimate purposes only. As it was, the war came on, and both Great Britain and France were obliged to introduce severe laws against the illicit use of morphine and cocaine by the armies and inhabitants of the warring regions. A recent Government Order announces the entire prohibition of the importation of opium into Great Britain except with the sanction of the Government. It is to be hoped that this will result in the limited manufacture of morphine so that as little as possible of this harmful alkaloid may find its way out of the country.

If proper pharmacy laws are enacted in China the problem of morphine eradication will be really an easy matter. Unlike opium, it has never been declared as an article of commerce, and our Government has always regarded it as a prohibited drug. Once Great Britain refuses to sanction its export, except directly to friendly Governments or legally qualified agencies, the question of smuggling will not be such a serious affair.

The Procedure Recommended.

The Customs laws regarding the importation of morphine and hypodermic needles into China are somewhat crude and inflict much hardship upon qualified medical men and apothecaries. One meets, for instance, with the following Customs Regulation (No. 693):—

On and after the 1st Dec., 1910, the manufacture in China by Chinese and foreigners of cocaine, morphia, and of syringes, needles, and such-like instruments for its use, is absolutely prohibited; and the importation of the same into China by Chinese and foreigners is likewise prohibited—except in the case of *duly qualified foreign medical practitioners*, foreign chemists and druggists, civil hospitals established by Government in any province, military and naval surgeons, and medical colleges of any kind complying with the following conditions, &c.

If taken literally—and it is often thus done—a Chinese medical man, however well qualified from Europe, America, or Japan, will be unable to use morphine or cocaine for the most humane purposes. Again, a hypodermic syringe is regarded by the Customs as an instrument solely for the illegal use of such drugs, and no Chinese medical man is able to procure it for the injection of emetine, pituitrin, or any of the new drugs. As matters remain at present, the culprits escape, for they can evade the laws by not declaring properly, whilst bona-fide practitioners and qualified apothecaries have to undergo all sorts of difficulties in this connexion.

I would suggest that this Conference pass some resolutions—

(1) Drawing the attention of the Government to the menace of morphine in China and the importance of taking immediate steps against its illegal use by cutting off the supply from the source.

(2) Asking the Government to enact without delay proper pharmacy laws to regulate the position of dispensers and pharmacists in charge of drug shops, the sale of morphine, cocaine, and other deleterious drugs and poisonous chemicals.

The articles of the Hague Opium Convention have amply paved the way for such laws. If requested, our two associations would depute members to render the necessary assistance in drafting the laws. The establishment of a Central Medical Council would facilitate matters immensely.

THE EXPERIMENTAL PRODUCTION OF TUBERCULOUS PERITONITIS IN GUINEA-PIGS PREVIOUSLY EXPOSED TO X RAYS.

BY J. J. McGRATH, M.B. R.U.I., D.P.H.

(*From the Bacteriological Department, Guy's Hospital.*)

THE existence of acid-fast bacilli, other than *B. tuberculosis*, in pathological material frequently necessitates inoculation methods either to confirm or exclude a diagnosis of tuberculous infection. Unfortunately the general utility of such tests is often discounted by the length of time before a definite result can be recorded.

Experience has already impressed upon us the advisability of employing the guinea-pig for inoculation purposes, since the introduction of even a few tubercle bacilli into this animal is followed by a definite sequence of events terminating in death from general tuberculosis at some period near to, or remote from, the date of inoculation (according to number of bacilli injected, type of bacillus—i.e., human or bovine, virulence of strain, site of injection, and other factors), and varying from a few weeks to several months.

The deterrent effect of this time factor which operates so adversely against the universal employment of animal experiment in clinical laboratory diagnosis has stimulated research, having for its object the abbreviation of the "observation period," with hitherto but few tangible improvements on the methods of Villemin.

Recently Morton and Murphy,[1] during the course of observations on the behaviour of transplanted cancer in white mice, noted that repeated exposures to small doses of X rays destroyed the major part of the lymphoid system in these animals without causing any obvious injury to other tissues or exercising any deleterious effect upon the general health. Heineke[2] had already shown that the effect of X rays was first manifested by the destruction of the lymphocytes.

Subsequently Morton[3] found that the same changes occurred in the guinea-pig, and further that one massive dose of X rays produced in this animal the same effect as repeated exposures to small doses. Taking now as a starting-point the assumption that the lymphoid system forms the main defence against infection by *B. tuberculosis*, Morton first exposed his guinea-pig to a massive dose of X rays, then inoculated into the peritoneal cavity material containing the tubercle bacillus, and obtained a tuberculous peritonitis obvious to the naked eye, as well as microscopically, within 14 days.

The importance of these observations, if capable of corroboration, cannot well be over-estimated, and this preliminary note deals with my experiments in this direction.

Normal healthy guinea-pigs of from 200 to 250 grammes in weight were exposed on one occasion only for a period of

[1] Journ. Exper. Med., 1915, xxii., 204.
[2] Mitt. a.d. Grenzgeb. d. Med. u. Chir. 1905.
[3] Journ. Exper. Med., 1916, xxiv., 419.

10 minutes to X rays derived from a Coolidge tube, a current of 5 milliampères backing up a 12½ in. spark. A differential leucocyte count was made of 25 of these animals the day following exposure to the X rays and every second or third day subsequently until the animal died or was killed, in one instance as many as 15 days later. Of these 25 animals a fall took place in the percentage lymphocyte count in 11 only, in 2 it was unaltered, and in 12 it was actually increased. These observations are being repeated.

The guinea-pigs after exposure to the X rays were then inoculated intraperitoneally with sputum or other material rich in acid-fast bacilli, which had all the morphological and tinctorial characters of *B. tuberculosis*. In the early experiments the association of common pyogenic bacteria in the material injected led to several deaths from acute septicæmia due to streptococcus or *B. coli*, but this risk was subsequently overcome by treating with antiformin every specimen that was not microscopically "clean" before injecting it into the guinea-pig.

The results obtained fully confirm Morton's observations, as the six selected examples in Table I. show. From these results it may be assumed that, given inoculum rich in tubercle bacilli, the experimental animal may be destroyed within 14 days with tolerable certainty that macroscopical tuberculous lesions will be found post mortem.

TABLE I.

Material inoculated: Guinea-pigs A, B, C, D, E, 1·0 c.c. sputum crowded with *B. tuberculosis*; F, 1·0 c.c. urinary deposit (catheter specimen).

Guinea-pig.	Result of inoculation of X-rayed G.P.	Post-mortem lesions.	
		Naked eye.	Microscopical.
A	Killed after 16 days.	Spleen enlarged, no tubercles seen. Liver, no tubercles. Mesenteric glands everywhere enlarged, soft and caseous.	T.B. present.
B	Killed after 15 days.	Spleen enlarged, with tubercle present. Tubercles on liver. Mesenteric glands everywhere enlarged, soft, caseous, breaking down easily.	,,
C	Killed after 14 days.	Spleen much enlarged. Tubercles on liver. Mesenteric glands everywhere enlarged, soft and caseous.	,,
D	Killed after 13 days.	Spleen normal. Caseating nodules found on liver. Numerous soft caseating enlarged mesenteric glands.	,,
E	Killed after 11 days.	Tubercles on liver and spleen, latter much enlarged. Mesenteric glands everywhere enlarged, soft and caseous.	,,
F	Killed after 12 days.	Small tubercles on much-enlarged spleen. Mesenteric glands, several enlarged, soft, caseous, easily breaking down.	,,

One of the points elicited by Murphy[4] in his earlier experiments is summarised in the following statement:—

"If the lymphoid system of an adult animal be depleted by exposure to X rays, the animal loses its power of resistance to heterologous tissues, and transplanted tissues are thereby enabled to grow readily within its body."

My own observations on the guinea-pig tend to show that this lack of resistance extends not only to the strangers within the gates—the inoculated tubercle bacilli—but also to its relationship to the external world, and many failures at the commencement of the investigation are to be ascribed to this cause.

As examples may be cited guinea-pig 1, which died within 24 hours from acute *B. coli* peritonitis; the control animal, identical in weight and injected with a similar quantity of sputum, remained alive for three weeks before it succumbed to general tuberculosis. Guinea-pigs 8, 9, 10, 11, 12, 13, all inoculated with the same material, died within 48 hours of acute streptococcic septicæmia. Guinea-pigs 24, 25, 27, and 28 were found dead within a few days of inoculation, in the morning following particularly cold nights in February of this year, whilst similar sized animals in adjacent cages were unaffected.

The earliest date at which naked-eye manifestations can be obtained has not yet been determined exactly, but a number of early deaths followed the inoculation of sputum literally crowded with tubercle bacilli, when no lesions were observed and no tubercle bacilli could be demonstrated microscopically up to the end of five days. (Table II.)

[4] Journ. Exper. Med., 1914, xx., 397.

TABLE II.

Material inoculated: Sputum in each instance.

Guinea-pig.	Result of inoculation of X-rayed G.P.	Post-mortem lesions.		Control.*
		Naked eye.	Microscopical.	
G	Died after 24 hours.	Good deal of fluid in peritoneal cavity.	Films from fluid and heart's blood showed the presence of *B. coli*. No T.B. could be detected.	Died after 21 days.
H	Died 4 days after inoculation.	Nil found.	No T.B. could be detected.	—
J	Died in 5 days.	No lesions found. Suspected to have died as a result of inoculation of antiformin.	No T.B. could be detected.	Died after 19 days.

* *Controls: Post-mortem lesions.*—Naked eye: In both control animals tubercular lesions found in spleen, liver, and mesenteric glands. Microscopical: Films showed T.B., numerous in guinea-pig G.

The most striking examples of early generalisation of *B. tuberculosis* in these X-rayed guinea-pigs are given in Table III. The value of the method must, however, be estimated by a standard of reliability—that is to say, it is not sufficient for the inoculation of material crowded with acid-fast bacilli to give a positive result at an early date; it must be capable of giving evidence of the presence of *B. tuberculosis* even when the material inoculated fails to show the micro-organism after prolonged microscopical examination. Two examples will suffice upon this point. (Table IV.)

TABLE III.

Material inoculated: In each instance 1·0 c.c. sputum crowded with *B. tuberculosis*.

Guinea-pig.	Result of inoculation of X rayed G.P.	Post-mortem lesions.	
		Naked eye.	Microscopical.
K	Died after 7 days.	Pin-point tubercles on spleen and liver. Spleen much enlarged. Mesenteric glands enlarged, soft, and caseous.	T.B. present.
L	,,	Pin-point tubercles found on liver. Numerous enlarged soft caseating glands which easily broke down.	,,
M	,,	Spleen enlarged. Numerous enlarged soft caseating mesenteric glands found.	,,
N	,,	Spleen enlarged. Mesenteric glands everywhere enlarged, soft, and caseating.	,,
O*	,,	Spleen somewhat enlarged. Numerous mesenteric glands enlarged, soft, and readily breaking down.	,,

* X-rayed three days before inoculation.

TABLE IV.

Material inoculated: Guinea-pig P, fæces; Q, catheter specimen of urine.

Guinea-pig.	Clinical diagnosis.	Result of inoculation of X-rayed G.P.	Post-mortem lesions.	
			Naked eye.	Microscopical
P*	Tubercular disease of intestine, ulceration.	Died after 8 days.	Spleen and liver not enlarged. Coils of intestine matted together. Small abscess found between coils of large gut. Mesenteric glands everywhere enlarged and soft.	T.B. present.
Q	Tubercular disease of kidney.	Killed after 12 days.	Tubercle found on spleen. Numerous mesenteric glands enlarged, soft, and caseous. No tubercle on liver.	,,

* X-rayed 3 days before inoculation.

In the fæcal material employed to inoculate guinea-pig P very prolonged search of the centrifugalised deposit after antiform treatment resulted in the detection of one small bunch of acid-fast bacilli; whilst careful search by several observers of the centrifugalised urinary deposit, subsequently injected into guinea-pig Q, failed to show any acid-fast bacilli whatever.

OPERATION FOR LOOSE SEMILUNAR CARTILAGE.

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A GREAT many operations have been performed for loose cartilage during the war, but the recovery of perfect function and fitness for active service has been slow in many cases. Those who supervise the after-treatment by massage, movements, and exercises tell me that they are depressed by the long duration of convalescence and disappointed with the ultimate results in some cases. These facts should lead us to consider whether sufficient care is taken in (1) the selection of cases suitable for operation; (2) the technique of the operation; and (3) the after-treatment.

I. *The Selection of Cases Suitable for Operation.*

It is clearly of the greatest importance to be sure of the diagnosis. Therefore the symptoms, signs, and diagnosis will be briefly discussed here.

Symptoms.—The history of the original and subsequent injuries is of the greatest importance, for the detachment of a semilunar cartilage is nearly always due to *indirect violence* such as a sudden twist of the leg. The internal cartilage is commonly displaced by a sudden outward rotation with abduction of the leg at the knee-joint. Occasionally it is due to extreme flexion of the knee and the sudden attempt to get up. Generally there is a severe pain and often an audible click at the moment of displacement. In many cases the patient feels the cartilage go both out and in. Often the patient has to be carried home or walks painfully on tiptoe, quite unable to fully extend the knee. As a rule, effusion occurs in the first attack. Recurrent displacements are often brought on by more trifling injuries, and later still the cartilage may be displaced by slight movements, such as turning over in bed.

Signs.—When the knee is examined soon after a displacement there may be distinct tenderness over the internal cartilage, and unless the latter has gone back into place the knee cannot be fully extended, and any attempt to do this causes great pain and a tight feeling behind the knee. As a rule, more or less effusion follows for a few days or weeks.

Diagnosis.—It is very important to take pains to exclude other conditions which may simulate loose cartilage, especially osteo-arthritis. An X ray examination often reveals changes in the articular surfaces and in the bones around. There is creaking in the joint, and other joints are commonly affected. Early tuberculosis, especially starting in the synovial membrane near the internal cartilage, is very difficult to distinguish, and radiography does not often help, but the peculiar pulpy character of the swelling with limitation of flexion, the general condition, and the history, are valuable aids in the diagnosis. Laceration of the internal lateral ligament, or partial detachment of it from the femur, may occur at the same time as displacement of the internal semilunar cartilage, but with this condition alone there is distinct local tenderness over the internal surface of the internal condyle of the femur, and sometimes there is an effusion of blood at this spot. In some cases the X ray examination reveals an exostosis near the knee-joint either of the femur or tibia. The slipping of a tendon over one of these may cause symptoms simulating those of a loose cartilage. Also a sprain of the tendons inserted on the inner side of the tibia high up—the sartorius, semitendinosus, or gracilis—may be mistaken for loose cartilage, but the tenderness, creaking, and swelling are lower. Radiography may indicate a new growth near the joint, especially in the centre of the head of the tibia or lower end of the femur. Such a growth may cause much pain and recurrent effusion into the knee-joint as a result of slight strains. The same method of examination may show one or more loose bodies in the joint, generally between the condyles of the femur or in the subcrural pouch of synovial membrane. A sesamoid bone near the gastrocnemius origin has often been mistaken for a loose body. Certain loose bodies such as detached fringes or pieces of articular or semilunar cartilage do not throw a shadow on the screen. In some cases an X ray examination reveals fracture or even detachment of the spine of the tibia. As a rule, this injury is the result of extreme violence. Enlargement of the ligamenta alaria sometimes simulates loose cartilage, and so may pendulous synovial fringes in other parts of the joint. These, unfortunately, do not show with the X rays. Detachment of the *external* semilunar cartilage is far less common, and when it does occur it is liable to be mistaken either for slipping popliteal tendon or internal semilunar. I have found it extraordinarily *movable as a whole*, and especially so in children over ten years who give no very convincing history of a definite injury. One boy could put the cartilage out and in at will during flexion and extension. A very loud click was heard at each movement, and the leg jerked laterally, while a swelling came and went away at the outer side of the patellar ligament.

Slipping of the popliteus tendon usually causes creaking and effusion further back on the outer side of the knee. Many youths, and especially young girls, develop recurrent effusion with insecurity of the knees as a result of prolonged exercise, but there is no history of locking or sudden clicking with agonising pain.

So many things may simulate loose semilumar cartilage that it is not always easy to be quite sure of it; therefore great care must be taken in gathering an accurate history, in making all necessary examinations, and in considering all the possible pitfalls. In many cases accurate diagnosis is impossible, but if the symptoms and disabilities are severe and recurrent, and due care has been taken to exclude the conditions which are not likely to be benefited by an operation, it is wise to advise exploration. As a rule, this soon reveals a removable cause.

Indications for and Against Operation.

1. It is rarely wise to operate after the first detachment, for recovery without operation is possible in these cases, unless the cartilage is actually out of place and cannot be reduced even under an anæsthetic.

2. When an anæsthetic is necessary to replace the cartilage an operation by a skilful surgeon with due care does not add materially to the risk of the patient. But under opposite or doubtful conditions it is clearly better to treat the case conservatively after the replacement. The best evidences of the persistence of the displacement are locking and inability to fully extend the knee, for when the cartilage lies between the prominent part of the condyle of the femur and the articular surface of the tibia, it is practically impossible to extend the knee to the full extent.

3. When the cartilage only causes slight symptoms but no actual disability for work or necessary exercise it is not advisable to operate; but

4. If frequent displacement interferes with the capacity of earning a livelihood or of taking necessary exercise an operation should be recommended.

5. It should be urged for recurrent displacement when the patient is liable to go to risky places where a sudden detachment may land him and perhaps his fellow workers in danger.

6. For soldiers liable to active service and coming under Groups 4 and 5 an operation is necessary. The same treatment seems to me to be advisable in them for severe first displacements calling for an anæsthetic for their replacement. It is clear that under the trying conditions of active service recurrence is very liable to take place, and much time is wasted by treating such cases too conservatively. On the other hand, slight displacements causing only transient symptoms are best treated conservatively and the patient kept on home service or garrison duty.

II. *Operation for Loose Internal Semilunar Cartilage.*

It is probable that most of the imperfect results of operation are due to errors of technique, and particularly to failure to take full advantage of a tourniquet. By using a tourniquet and making the operation bloodless the operation is made very much easier and safer, for the surgeon can see quickly what is wrong and deal with it in a few minutes. There is no need to use any sponges or to introduce anything into the knee except sterile instruments. Manipulations and undue irritation by frequent sponging, long exposure, and, above all, the escape of blood into the knee-joint are avoided. All these tend to cause synovitis and even infection, and therefore delay the after-treatment by massage, movement, and exercises. Many surgeons do not use a tourniquet at all for this operation, being afraid of bleeding into the joint after the operation. Many others remove the tourniquet towards the end of the operation in order to secure the divided blood-vessels. This is entirely unnecessary, and the tourniquet should not be removed until the

wound has been accurately sewn up and the bandages firmly applied over a massive dressing. Under these circumstances there is no reason why a patient should be laid up any longer after an operation for loose cartilarge than after an ordinary slipping of the cartilage—in fact, the removal of the cartilage should hasten the recovery of function.

Most of the disabilities following the operation are due to the effusion of blood or fluid in the knee as a result of (*a*) faulty technique, (*b*) various degrees of infection, and (*c*) unnatural restraint imposed upon the knee after the operation. Whenever possible the patient is made to rest his knee for two or three days before the operation, so as to lessen the effusion and congestion of the synovial membrane. The skin is carefully prepared. It is shaved, if necessary, from the middle third of the thigh to the middle third of the leg, then washed with ether, painted with tincture of iodine, and a sterile pad applied. When the patient is under the anæsthetic the leg is held up for several minutes to empty it of blood as far as possible, and then a flat rubber tourniquet is applied very tightly around the middle of the thigh. The knee is nearly semi-flexed over pillows or over the end of the table, and sterile towels are carefully arranged and secured to the thigh and leg. A vertical incision[1] 2½ inches long is made over the interval between the tibia and femur, one inch internal to the ligamentum patellæ. The wound extends downwards half an inch below the upper border of the tibia. Sterile gauze pads are clipped to the edges of the wound before the knee-joint is opened. These leave no skin exposed. The capsule is opened freely and generally some fluid escapes. By retracting the edges of the capsule a good view is obtained of the anterior part of the internal semilunar cartilage, and any abnormality of this part can be seen at once. In many cases a tongue-shaped piece is semi-detached and turned inwards. In others the whole of the anterior part is loose. In others the two ends are the only parts attached, the middle portion often lying in or towards the intercondyloid notch. In some cases the cartilage looks normal, but proves unnaturally movable backwards and forwards as a whole. In a few cases the front end seems normal, but on drawing the cartilage forwards and flexing the knee a detached piece can be seen turning in from the posterior part of it. While the assistant retracts the edges of the wound the surgeon detaches the front end of the cartilage from the tibia with the knife and draws it forwards and inwards with a Mayo-Ochsner forceps, while he gradually separates the middle and posterior parts from the tibia and capsule of the joint. The separation of the posterior part is made easier by further flexion of the knee, and especially by the use of a strong blunt-ended tenotome. Nearly the whole cartilage is removed, for incomplete removal is a frequent cause of recurrence of symptoms. Unless the cartilage is at fault some other cause of the symptoms must be sought, and, if necessary, the wound prolonged upwards. In many cases the tags of the internal alar ligament are enlarged and œdematous. Sometimes they are very large, white, and hard from frequent injury. These should be removed. In some cases the anterior crucial ligament will be found to be partly detached from the tibia, with its free end frayed, obviously calling for removal. In others a fracture with detachment of part or the whole of the spine of the tibia is seen. In a few one or more loose bodies will be seen in the inter-condyloid notch or perhaps be squeezed from the subcrureal pouch by external manipulation. Exceptionally a fracture of the articular cartilage of the femur will be seen, especially on the front. A tongue-shaped piece of the articular cartilage may flap and display the bony surface of the femur. It can be replaced so that only a linear fracture is seen, but the movements of the patella dislodge it again during active exercise. The whole flap should be removed and the edges of the gap smoothed with a sharp knife. The knee is straightened and the capsule is accurately sewn with continuous fine sterile catgut, and the skin with a continuous suture of linen thread. A sterile pad is placed on the wound and secured by a sterile gauze roll. Then a large pad of Gamgee tissue or cotton-wool is applied all around the lower third of the thigh, the knee, and the upper third of the leg, and this is bandaged firmly but not very tightly. Another thick layer of cotton-wool is applied and very firmly bandaged, taking care to leave the upper edge a little looser than the rest, in order to avoid discomfort and swelling of the knee and leg. For the same reason a cuff of wool extends both above and below the tight bandages. Then the tourniquet is removed. No splint is applied, but the knee is slightly flexed over a soft small pillow and the limb is raised on a wedge pillow.

[1] Curved incisions trespassing on the important internal lateral ligament are to be condemned, and so are low incisions approaching the cartilage from below and giving no adequate view of the interior of the joint.

III. *The After-Treatment.*

As a rule there is very little pain and rarely any that is not controlled by doses of aspirin, gr. x. Every day from the beginning the knee is moved a little more. A hand is placed under the knee and the limb thus very gradually flexed. Then the heel is lifted up and a hand is placed on the front of the knee to straighten the latter. No pain need be elicited if this method is adopted early and gently enough. At the end of three or four days the outer bandage and layer of cotton-wool are removed and, if necessary, the inner bandage is slackened a little, but the sterile dressings are not disturbed until the end of a week when the stitches are removed. Then the patient is allowed up on a wheel chair with the leg slightly flexed. On the tenth day he is allowed to walk about somewhat stiff-kneed, taking care to keep the diseased leg always in front of the healthy one, and to put the weight chiefly on the heel. This prevents the knee giving way. From the beginning the extensors of the knees are gently massaged, and the patient is encouraged to use these muscles and to move the knee a little more every day. The patella is moved sideways and up and down upon the femur every day. All passive movements are gentle and steady, and never sudden or jerky. At the end of a week flexion to a right angle is generally easy and comfortable. Massage of the knee-joint is not commenced before 12 days, when the wound is firmly healed. Exercises against resistance are very valuable in developing the muscles. Radiant heat and cataphoresis are often desirable, and a crêpe bandage around the knee *only* is useful for about a month. While the application of splints with delay in active movements are extremely detrimental, violent passive movements commonly cause effusion, pain, weakness, loss of confidence, and delay in recovery. Similarly, prolonged standing and fatigue from any form of active exercise in the early days delay recovery. All movements should be gentle, all exercise short of fatigue. With due care the patient is generally walking about fairly well at the end of a fortnight. Movements and power are almost perfect within a month or six weeks.

THREE CASES OF SEPTIC INFECTION DUE TO OTITIS MEDIA.

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THE three cases referred to in these notes made their appearance in a military hospital at about the same time. As there is scarcely a problem connected with septic infection following on aural disease which was not involved in their management, and as the results in the second and third cases were most gratifying, we have thought it worth while to place a summary of the facts on record.

CASE 1. *Otitis media; broncho-pneumonia; abscess of neck; cerebellar abscess; death.*—Private, aged 20, admitted to hospital with profuse otorrhœa on right side. The ear had discharged for a long time previously and apparently had not been treated. Small perforation of membrane and some tenderness behind mastoid process. Temperature normal, pulse 64 to 74, and respirations 16 to 18. Two days after admission temperature suddenly rose to 104·4°, pulse to 86, respirations to 20 but no rigor. The mastoid process was immediately opened up; some granulation tissue found in antrum and one small pocket of pus in mastoid process.

Shortly afterwards patient developed broncho-pneumonia, apparently streptococcal in origin, and temperature range rose daily to 102° for about 10 days, when it became practically normal. General condition fairly good, but he did not progress; no definite symptoms referable to head. Examination of eyes, however, on eighteenth day after admission showed optic neuritis with hæmorrhages on opposite (left) side. The following day blood count showed very slight leucocytosis.

Exploratory operation; mastoid wound was enlarged upwards and backwards and a large extradural cerebellar abscess evacuated. Lumbar puncture gave no indication of any abnormality of cerebro-spinal fluid. Condition remained somewhat unsatisfactory, with temperature rising to 102° until forty-third day, when optic neuritis was found to have definitely increased. Focal symptoms completely absent. In view, however, of unsatisfactory general condition the bone above and behind mastoid was removed, the dura exposed, and both cerebellum and middle lobe explored with negative results.

On the fiftieth day a deep-seated abscess in back of neck on both sides was evacuated. It was apparently unconnected with mastoid, at all events no gross connexion was visible. The pus was streptococcal. On fifty-second day internal jugular vein was exposed and tied, but patient died of exhaustion three days later. No vomiting and cerebral symptoms absent from beginning to end.

The post-mortem report was as follows: Lungs congested, less resilient than normal. Heart fatty with a little fluid in pericardial sac. Kidneys congested. Brain: dura slightly adherent over vertex. Cerebral vessels turgid. Cloudy yellow fluid issued from beneath tentorium. On raising tentorium patches of lymph were observable on right half of cerebellum. Whole of under surface of cerebellum and pons was coated with layer of lymph. There was an abscess cavity in right half of cerebellum in antero-inferior portion. It was irregular in shape and approximately 2 × 1½ cm. in size.

This case was noteworthy because there were no symptoms of cerebral complication. The guarded prognosis given throughout was based on the continuance of the left optic neuritis. The existence of optic neuritis was the more remarkable, as from first to last there was no suggestion of raised intracranial pressure.

CASE 2. *Otitis media; mania; infarcts in lungs and intestines; gluteal abscess; recovery.*—Private, aged 28, admitted into hospital with profuse otorrhœa on right side. History of long-standing ear disease; apparently no treatment. Temperature on admission 100·2° F.; pulse 72. Small perforation of membrane and some slight tenderness over mastoid region. Two days after admission temperature suddenly rose to 104·8° and pulse to 96, but no rigor. He became semi-maniacal and had to be put under restraint. A swelling appeared below mastoid process, and operation was performed on sixth day after admission. Whole of mastoid process was riddled with collections of pus, but lateral sinus apparently normal. On fourth day after admission white blood count was 15,300. After operation mental condition improved, but temperature oscillated between 103° and 98·8° until eighth day, when he developed in rapid succession diarrhœa with blood-stained mucous discharge showing *Bacillus coli*, pulmonary infarction with hæmoptysis, and a large gluteal abscess extending down to sacro-sciatic notch. Pulse rose to 150 and temperature remained irregular. A blood culture at this stage showed streptococci. There was no optic neuritis, but there were patches in his eye of old choroido-retinitis. On fifteenth day jugular vein was ligatured in neck and lateral sinus exposed and obliterated; abscess in gluteal region drained. The exposed dura mater was explored with negative results. Fifteen ounces of pus were obtained from gluteal wound. From this point recovery was steady and only interrupted by suppuration along track of jugular vein which gave no serious trouble.

The recovery of the man is remarkable and is really an indication of the possibilities of successfully combating gross septic infection.

CASE 3. *Otitis media; extensive mastoid involvement; septicæmia; recovery.*—Rifleman, aged 25, admitted into hospital with profuse discharge from right ear. History of long-standing otorrhœa; apparently no treatment. On admission tenderness over mastoid region; temperature ranged between normal and 100° F.; pulse 104. Discharge very profuse. Usual mastoid operation at once performed; greater part of mastoid process was removed by reason of extensive infiltration with pus. Lateral sinus appeared normal, but there was a small sinus leading down to cerebellar dura mater which was curetted. The whole of the suppurating bone could not be removed for obvious anatomical reasons. On the fifth day after admission temperature rose to 105·6°, pulse to 140, respirations to 30. He sweated profusely and was seriously ill without definite localising symptoms. Temperature subsided somewhat, but condition not satisfactory. Blood count showed white blood corpuscles 13,100. On tenth day jugular vein was tied and lateral sinus traced backwards and obliterated by pressure in mastoid region; dura not opened. The patient was not relieved and developed stiffness in back of neck with muscular rigidity. Fluid obtained by lumbar puncture appeared normal. His condition remained unsatisfactory, temperature rising to 102°, when an abscess appeared along course of jugular vein, and on its evacuation symptoms came to an end; excellent and uneventful recovery. Cultures made from blood during course of disease showed streptococcal infection.

Reviewing these three cases it is difficult to assign a positive and specific value to ligature of the jugular vein, but the impression left in mind is that the operation was of definite service. The recovery of Case 2 is remarkable and illustrates so well the general rule that whilst septic infections in aural cases within the dura mater are too often fatal, recovery can be expected in many septic aural cases with the grossest lesions so long as the infection is outside the dura mater. It should be stated that antistreptococcal serums were freely employed in all three cases. The operative procedure throughout was effected, so far as the aural work was concerned, by Captain William Wilson, R.A.M.C. (T.C.), and so far as the general surgical procedure was concerned, by Captain S. W. Maslen Jones, R.A.M.C. The post-mortem and pathological examinations were made by Captain E. C. Myott, R.A.M.C.

LIGATURE OF COMMON CAROTID ARTERY.

NOTES ON THREE CASES AT A CASUALTY CLEARING STATION.

BY J. J. M. SHAW, M.D. EDIN.,
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IN those cases of injury to the large vessels of the neck which escape death upon the field from primary hæmorrhage, operative treatment is seldom called for before the patient reaches a base hospital. The conditions usually presented at a casualty clearing station are either a small deep traumatic aneurysm or, more commonly, an arterio-venous aneurysm of variable size, while in a few rare cases of severe reactionary or secondary hæmorrhage ligation may be indicated.

An aneurysm increasing in size or dangerously superficial in neighbourhood of wound may necessitate early operation, but all other cases are best treated by rest and observation. At the end of 14 days, if the tumour be stationary or decreasing in size, they may be transferred to the base, where spontaneous cure will sometimes occur after several weeks or operation can be performed when the limit of diminution is reached.

An aneurysm existing for even a few hours is the best preparation for ligature owing to the fact that the collateral circulation is gradually and not suddenly called upon to supply the area of deprivation, and can adequately cope with the requirements of the tissues when complete cessation of supply through the original channels is effected. This is well exemplified in the case of the popliteal artery where severance of the vessel by a bullet, even without much loss of blood, almost invariably leads to gangrene of the leg, while ligature for traumatic aneurysm very seldom does so; the Letouffier tube aims at the performance of this function of an aneurysm in the provision of a modified supply of blood while the critical period of collateral expansion is tided over.

During 30 months in a casualty clearing station, amongst a total of 44,000 wounded, I have seen only three cases in which ligature of the common carotid appeared to be indicated, each for one of the three conditions enumerated above—severe secondary hæmorrhage, dangerously superficial aneurysm, and a tumour which increased in size despite rest in bed.

CASE 1.—Private, wounded on Dec. 28th, 1914. Rifle bullet entered neck posteriorly at level of fourth cervical vertebra and one inch from middle line on left side. Ascending ramus of lower jaw and alveolus of upper on left side were shattered. Malar bone fractured but not comminuted, and whole cheek from mouth to ear torn in shreds. He was in a state of collapse and much exsanguinated when admitted to No. 2 Casualty Clearing Station eight hours after being wounded. An intravenous saline, containing two drachms of brandy, was administered, and this, combined with warmth, gave rise to severe reactionary hæmorrhage. The large gauze plugs in the wound were quickly withdrawn and, aided by the patient fainting, several large fragments of bone and loose groups of teeth were removed. No bleeding points were secure, but a ligature was applied to twisted end of facial artery which lay free in wound. Packing sufficed to arrest welling up of blood from deeper parts at the time, but on following morning another severe hæmorrhage occurred and under an anæsthetic I tied the external carotid through an incision extending from the wound.

For four days there was no further hæmorrhage, but the wound became extremely septic and the fœtor, associated with large wounds of the mouth, was unpleasantly pronounced. On fifth day violent hæmorrhage took place while patient was drinking some lemonade. The blood appeared to flow from the internal carotid where ulceration of vessel had probably occurred. He rapidly became semi-conscious and, under a light anæsthetic, I tied the common carotid through transverse incision. This wound was covered with gauze and collodium and remained aseptic throughout. This operation rendered him completely aphasic and hemiplegic for three days and very dangerously ill for a week. On fourth day he suddenly called out "Here," and this word was used to express all his wants until the seventh day when his vocabulary commenced to increase and, in certain moods, to intensify considerably. First voluntary movement of right arm and leg occurred also on fourth day after operation. He was very irrational for about 10 days and required nasal feeding on several occasions. When transferred to base, three weeks after last operation, the movements of limbs of right side equalled those of left in vigour and he was cheerful and sensible although still very weak. Five months later he wrote from Ireland to say that he was quite well except for "the extra little hole in his face."

CASE 2.—Private, wounded on July 26th, 1916. Shell splinter entered left side of neck at anterior border of sterno-mastoid immediately above level of cricoid. Prior to admission to No. 44 Casualty Clearing Station fine gauze plugging had been packed into wound and hæmorrhage successfully arrested. A large superficial arterio-venous aneurysm was present with loud "machinery" bruit and distinct "prickly" thrill. He complained of continuous roaring noises in the head, like breakers on a shore, which forbade sleep; considerable discomfort on swallowing or movement of head, but no actual pain.

As the aneurysm was large and dangerously near the surface, exposing him to risk of copious hæmorrhage on extrusion of plug, I ligatured common carotid on following day. No change visible in face on tightening of ligature. On removal of gauze plug from wound considerable venous hæmorrhage took place. The sac was freely exposed and the veins leading thereto, including internal jugular, were grouped together above and below and ligatured. As the hæmorrhage was thereby completely arrested, the artery which had been undisturbed at seat of injury was not ligatured distally. Missile not searched for. No post-operative symptoms. Noises in head had disappeared completely; no trace of paralysis or aphasia. He was transferred to base on tenth day after operation, and three months later wrote that missile had been extruded on Oct. 1st through small sinus at seat of original wound without operation, and he was about to have a board with view to return to active service.

The third case was undertaken for an enlarging tumour which proved to be an abscess in the laminæ of the original aneurysmal sac, and unfortunately ended fatally.

CASE 3.—Private, wounded on right side of neck by shell fragment on Oct. 24th, 1916. He was admitted as a walking case to No. 44 Casualty Clearing Station eight hours after being hit, with temperature 102° F. and pulse 120. Wound small and in mid-line of sterno-mastoid immediately below level of cricoid. No external hæmorrhage after admission, but patient said it had bled freely at first and then stopped of its own accord. A small deep pulsating tumour felt; distinct aneurysmal thrill and also a bruit, which was, however, more easily audible over temporal artery than through fascial and muscular layers.

The tumour increased in size for two days but caused very little discomfort, temperature and pulse falling steadily. On third day it was visibly smaller and continued to decrease in size until seventh day, when he felt "champion" and talked and ate with great gusto. On evening of eighth day pulse rose from 68 to 84 and temperature from 98·6° to 99·8°, the swelling being slightly larger. He slept well, however, and felt better the following morning. He complained of tiredness; towards evening respiration appeared slightly interfered with. The slight irritative cough which had affected him throughout sounded harsher. On following morning pulse had dropped from 96 to 82, temperature 99°, and he felt again a little better, but swelling had increased considerably towards root of neck, and lips and ears showed a slight degree of cyanosis. I decided to operate, and through long oblique incision first disarticulated and removed portion of inner end of right clavicle to have ready access to artery in event of rupture of sac. The common carotid was ligatured about 1½ inches above innominate bifurcation. The tumour caused vessels of neck to curve outwards, while trachea and œsophagus were pressed over to left of middle line. The large tumour was then incised, and out flowed several ounces of creamy pus. When this had been mopped away an inner tumour about size of large hen's egg became visible—the actual aneurysm. The pus cavity, developed in intermediate laminæ of original aneurysmal sac, surrounded the aneurysm on all sides except posteriorly, and stretched up behind sterno-mastoid muscle to mastoid bone. Two fingers could be easily passed between œsophagus and prevertebral fascia. The aneurysmal sac was then incised and a finger placed upon bifurcation of carotid immediately below which lay an oval slit about 15 mm. in length on anterior aspect. Jugular vein appeared unwounded. A distal ligature was applied and the wound left open. The patient never rallied and died four hours later. Post mortem: Jugular vein found intact, but bound down with the vagus nerve in dense inflammatory tissue. Nothing beyond slight comparative congestion of left cortex observable in brain. Smear of pus showed numerous micrococci and several organisms closely resembling *B. perfringens*. Pericardium contained 152 c.c. of clear fluid. The small fragment of metal lay embedded in some enlarged deep cervical glands on left side.

The heart tires with great rapidity under even a small degree of respiratory embarrassment due to obstruction of the air-passages in the neck, whether the cause be aneurysmal or a wound of larynx or trachea. The facts of the external wound having practically healed over the sterno-mastoid, the masking of the presence of the pus stratum by the deep fascia, and the patient's appearance and sense of well-being until the morning of operation, appeared to justify the hope that a second diminution might occur. Delay in operation was disastrous, and the experience of this case would lead me in future to operate at once upon an aneurysm which, having become quiescent, again commences to enlarge.

THE MEDICAL REGISTER.—The official Register just issued contains the names of 43,481 persons, of whom 54·2 per cent. are on the local Register for England, 31·8 per cent. for Scotland, and 14 per cent. for Ireland. 1202 names (including 123 colonial and 7 foreign registrations) were added during the year, and 59 names were restored. 1005 names have been removed from the Register during the year: 983 on evidence of death, 14 under Sec. XIV. and 8 under Sec. XXVIII.-IX. of the Medical Act, 1858. This accounts for all the removals, it being significant that no registered medical man has formally removed his name as having ceased to practise.

DOWN DISTRICT ASYLUM, DOWNPATRICK.—During 1916 the total daily average number of residents in the lunatic asylum at Downpatrick was 778, 412 men and 366 women. The patients admitted were seven less than in the previous year and the net average cost per head showed an increase of only £2 16*s.* 9*d.* as compared with 1915, the amount received for the maintenance of paying patients being exceptionally large. From the farm there was a net profit for the year which ended March 31st, 1917, of £2142 4*s.* 9*d.*

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

DOUBLE DISLOCATION OF JAW SIMULATING FRACTURE OF THE SKULL.

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MEDICAL SUPERINTENDENT, WILTS COUNTY ASYLUM, DEVIZES.

THE following case, in which double dislocation of the jaw backwards into the external auditory meatus induced symptoms simulating fracture of the base of the skull, gave rise to interesting diagnostic questions.

The case was that of a tall, well-built, well-nourished man, aged 23, who had been an inmate of the Wilts County Asylum since April, 1916, on account of epilepsy. The fits occurred frequently, were of a severe type, and attacked him without warning. He had a broken nose and several old scars on his face, the result of injuries sustained in falls that had occurred in previous fits. On March 15th last he was walking in one of the airing courts, when suddenly in a fit he fell forwards "like a log," and struck the point of his chin on the asphalt pavement. He was at once found to be bleeding not only from a deep lacerated wound on the chin, about an inch long, but also from both ears. Within a few minutes he was rolling about on the ground and moaning. He was carried into the hospital ward, and it was then found that his jaw had been driven backwards and was fixed almost immovably in the closed position. On attempting to move it, crepitus was felt, though no fracture of the jaw could be located. By the following morning he was able to talk and to drink milk; but he continued very stupid and apathetic, so that it cannot be stated whether his hearing was affected to any extent. There was some swelling and pain in the neighbourhood of each temporo-maxillary joint. Mobility of the jaw was not recovered, and the patient remained unable to take any but liquid food. The discharge from the ears was practically continuous, being bloody till the eighth day from the injury and then serous. On the eleventh day about a teaspoonful of pus came away from the left ear, and on and after the seventeenth day pus was exuding from both ears. On the seventh day the temperature rose rapidly and reached 102·8° F. Irregular pyrexia continued until the nineteenth day after which, in spite of the purulent discharge from the ..s, the temperature remained subnormal for several days, until after the onset of a status epilepticus. He had had occasional epileptic fits since the accident. On the twenty-sixth day the fits became frequent, 20 being recorded for that day, 10 for the twenty-seventh day, 27 for the twenty-eighth, and 15 for the twenty-ninth day up to the time of his death at 1.20 P.M. (April 12th). The fits appeared comparable to a typical status epilepticus and classical symptoms of meningitis were absent.

It was expected that a fracture would be found extending across the base of the skull, but post-mortem examination showed that there was no fracture of the base in the ordinary sense of the term. The base as viewed from within the cranium was intact, and there was no injury or recent disease of any of the cranial contents. There was a fracture of the tympanic plate of each temporal bone and septic arthritis of both temporo-maxillary joints. What had happened in the fall was that the condyles of the jaw had been driven backwards, smashing the tympanic plate, encroaching upon the external auditory meatus, and opening a way from the meatus into the joint, with the result that septic arthritis had been set up. There was no fracture of the jaw.

CASE OF ULNAR PARALYSIS; ULNAR-MEDIAN ANASTOMOSIS; RECOVERY.

BY J. K. HAWORTH, M.D., B.S. DURH.,
CAPTAIN, R.A.M.C. (S.R.); SURGICAL SPECIALIST, 8TH LUCKNOW DIVISION.

ON April 9th, 1916, in Mesopotamia, Private H—— was shot in the left forearm just below the elbow on the inner side by an explosive bullet. In December, 1916, he was admitted to Lucknow Station Hospital suffering from typical

ulnar paralysis of left hand. He complained that his hand was useless and he wanted something done. On examination the ring and little fingers of his left hand were flexed markedly and quite useless, and blue in colour. He could not move them and could feel nothing. There was marked wasting of the interosseus muscles. He could not move the fingers apart.

Operation, Feb. 10th, 1917.—A curved incision was made over the front of the left arm. The lower part of the ulnar nerve was found and seemed of fair size. The nerve was dissected out and taken under the flexor muscles and let into the median nerve by a valve-like slit, being held by a very fine catgut suture. The nerves were held in apposition by a skein of catgut passed round the nerves outside of a layer of membrane from the inside of a boiled egg. The wound was closed and healed perfectly. Sixteen days afterwards he noticed the two fingers were no longer blue, but pink and healthy-looking. He could just feel a little in them. Some days later he could move them a little. On examination, six weeks after the operation, the fingers looked normal. He could move them fairly well, even to extending them and flexing them to almost their full limit. He could feel quite well in them and could slightly separate them. He stated himself that the use of his hand was rapidly improving. He has been transferred to the Electrical Institute, Dehra Dun, for treatment.

Remarks.—The nerve may never have been divided by the wound yet held by very dense scar-tissue. Whether an attempt should have been made to free the nerve or not is doubtful. The scar-tissue would doubtless have bound it down again so it might appear that the cross anastomosis of nerves might be useful in similar cases.

Reviews and Notices of Books.

Surgical Therapeutics and Operative Technique. By E. DOYEN. English edition prepared by the author in collaboration with H. SPENCER-BROWNE, M.B. Cantab., Élève de l'Institut Pasteur; et Chef de Clinique de l'Institut Doyen. Vol. I. London: Baillière, Tindall, and Cox. 1917. Pp. 746. Price 25*s.* net.

THIS book is not a mere literal rendering of the French edition of Doyen's great five-volume work, but at Dr. Spencer Browne's request the author rewrote several portions of the original before the translation was undertaken so as to make it exactly representative of the present practice of the clinic with which the two were associated as chief and first assistant. The English edition therefore represents the methods employed by a brilliant surgeon as improved by him nearly up to the time of his death. The volume now issued is a first instalment of three which are to contain the substance of the French five. Not the least interesting portion of this volume is the historical introduction, in which there are reviewed the methods which have from time to time been employed for the arrest of hæmorrhage. Chapters follow in which the instruments preferred are described, some of them at great length; for instance, nearly 10 pages and 17 illustrations are devoted to the account of the operating-table devised by Doyen. Many of the instruments were invented by him, a department of surgery in which he showed great ingenuity. While much of the advice given on surgical technique is sound, statements occur here and there which would not be endorsed by many surgeons. On two main principles the author specially insists. The first of these is that time should not be wasted in the course of an operation by ligaturing bleeding vessels. Doyen holds that many vessels are tied quite needlessly, for if the occlusion of these vessels had been left to the end of the operation many of them would not have required ligature at all. The second principle is bound up with the first; it is that operations should be completed as quickly as possible. When a tumour has to be removed it should be got away as rapidly as possible, for if this is done the shock to the patient is diminished and less blood is lost.

So far as the book may be judged by this first volume it will serve a useful purpose in laying novel ideas before the surgical reader, acquainting him with methods found useful by an adroit operator and furnishing valuable suggestions on the use of instruments. The translation is good on the whole, but phrases and expressions occur which are hardly current in medical English. We may quote a few examples. "A wen of the hairy scalp" is not an improved rendering for "a sebaceous cyst of the scalp." Readers may reasonably ask: Where is the "genal region"? What is a "recoil screw"? The sentence: "The phenol vapours chased the flies" has the virtue of being graphic if unusual, but "The pavilion of the ear" may merely mystify. Consultation of a good medical dictionary would clear up the difficulties, let it be admitted, but authors should not put this trouble on their readers unnecessarily. These are small matters, and only the translator knows the difficulties of his task, but at the present time when a large proportion of the medical profession can enjoy the Gallicisms in their original form, it should be the translator's task to render into current English.

The Involuntary Nervous System. By WALTER HOLBROOK GASKELL, M.A., M.D., F.R.S. With coloured figures. London: Longmans, Green, and Co. 1916. Pp. 178. Price 6*s.* net.

THIS first volume of the proposed series of monographs on Physiology, edited by Professor Ernest H. Starling, leaves physiological science painfully aware of the serious loss it has sustained by the regretted death of Professor Gaskell. It is to him above all others, as Professor Starling declares, that we owe our present knowledge of the involuntary nervous system. The monograph under review represents the finished product of the activities of one who for no less than 40 years devoted himself to the meaning of the nervous system and the problems that have arisen from its study. At a time when recent researches on the sympathetic nervous system have served to indicate its great importance physiologically and clinically it is gratifying to have from the hands of a master a consistent and harmonious account of the significance of the involuntary muscular systems in the higher vertebrates both from a morphological and from a physiological point of view.

It is difficult, in a brief review, to indicate even the general conclusions of a book which will repay perusal from cover to cover. Professor Gaskell divides the involuntary muscular systems of the body into various groups, vascular, ectodermal, endodermal, sphincter, and so on. The muscles of some of these contract under the influence of adrenalin, the endodermal only in the presence of acetyl-cholin. We have thus an adrenalin group and an acetyl-cholin group. These two groups are supplied by fibres from two distinct nervous systems—viz., the sympathetic nervous system (in the old sense) and the enteral nervous system. Further, the motor nerve cells of these two nervous systems are in turn connected with the central nervous system, again by two separate arrangements, the former by the thoracico-lumbar outflow from the spinal cord, and the latter by the bulbo-sacral outflow. The nerve cells of both these systems were, it is known, originally in the central nervous system and have travelled out from it. The cells of the sympathetic nervous system are linked to cells containing adrenalin (the chromaffin system), which presumably existed originally in the central nervous system as adrenalin-nerve cells, and became separated, though still associated, as they passed out. On the other hand, the cells of the endodermal system (enteral) have travelled out as far as the muscles themselves, and have been accompanied by inhibitory cells from the sympathetic system; in both cases there is abundant evidence of reciprocal innervation between the two groups, enteral and sympathetic. Of still greater speculative interest is Professor Gaskell's theory of the conversion of the nervous system of the invertebrates into that of the vertebrates. He believes that the central nervous system of the invertebrates has formed the central nervous system of the vertebrates by growing round and enclosing the alimentary canal of the former, so that the alimentary canal as found in the vertebrate is a new formation derived from structures already existing in the invertebrate ancestor. For the details of the process the reader must turn to the book itself.

As may be imagined, a monograph of this description, representing the considered conclusions of a lifetime of research, cannot be gauged by any easy standard of superficial criticism. Its appeal, however, is not to the physiologist alone. The scientific clinician will not fail to grasp

its bearing at many points on the phenomena of clinical medicine. It is a book of comparatively few pages, but it is deserving of serious study, and with its broad lines of investigation and wide outlook is eminently calculated to arouse interest and stimulate discussion.

Finch and Baines: A Seventeenth Century Friendship. By ARCHIBALD MALLOCH, M.D. McGill, Captain, C.A.M.C. Cambridge University Press. 1917. 4to. Pp. 89. 10*s.* 6*d.* net.

THE story of the friendship of the two seventeenth century doctors, Sir John Finch and Sir Thomas Baines, is one of considerable psychological interest, and Captain Malloch has told it exhaustively in this beautifully illustrated quarto volume. Every line of the text and the large number of references to authorities, living and dead, as well as quotations from written and printed manuscripts, prove that he has spared no pains to put the two seventeenth century worthies before us exactly as they lived. Almost always in the perpetual coupling of the names Finch comes before Baines, and in public life he occupied the more prominent position. Son of the Recorder of London, brother of the Lord Chancellor, professor of anatomy at Pisa, and English Ambassador at Constantinople, he led a full and distinguished life, but during nearly forty busy years in various European capitals he always remained in the closest touch with his college friend Baines. Together they left Christ's College, Cambridge, after graduation, together they toured Europe, and together they received medical degrees at Padua; Baines lived at Pisa during Finch's professoriate, and at Constantinople with his Embassy; both were knighted, though not simultaneously, and together they were made Fellows of the Royal College of Physicians of London; after 36 years of the closest business and intellectual intimacy they died within a year of each other; in their wills they both endowed their old College at Cambridge, and they were buried together in the College chapel. The probability is that each without the other was incomplete, and that Baines supplied for his more brilliant friend a certain weight and solidity of character wanting in the affectionate and credulous Finch, but such complete fusion of two identities, even though it be thus superficially explained, is none the less extraordinary. Captain Malloch has supplied us in this beautifully printed and illustrated book with an interesting historical and medical note.

JOURNALS.

Military Surgeon.—The April number of this journal opens with an article by Dr. Fielding H. Garrison on the foresightedness of Lauder Brunton in respect of the position of Great Britain on the occurrence of war. We comment on this article elsewhere. Surgeon R. G. Heiner, United States Navy, Instructor in Hygiene at the Naval Academy, writes an interesting paper insisting that it is quite easy to work for five or six days at high pressure with no food, or only carbohydrate food; that for the first 10 or 20 hours there is discomfort, but that afterwards there is loss of appetite and ability to work for 16 hours a day for the next five days, with marked increase in nervous and muscular energy. There should then be given a glass of milk, after which the man will sleep soundly for several hours, and waking will have a good meal and again go to sleep; on re-waking he will have a ravenous appetite and will eat heartily and sleep soundly for the necessary three days' rest period. His weight will return to the normal or a little above, and there will be little inconvenience when he again commences to fast and work. This system, Surgeon Heiner urges, will make the food-supply of armies much easier for generals, and will give artisans much better housing, saving, too, their daily train journeys, for they will sleep in airy dormitories at the works during their fasting spells and go home to their houses, far out in the country, for their week of rest twice only in a month. Exercise should be taken after eating, light exercise after breakfast, and the most heavy exercise after the evening meal. Stimulant, which seems to mean coffee, should be given after meals. This system would, he thinks, be of special advantage in the treatment of tuberculosis. The paper will well repay perusal, and everyone will remember how our soldiers, after a "big push," when they had done great work on small rations, did little when they returned but eat and sleep. The wounded, for three days after they returned to England, slept all the time, dropping off to sleep again at once after they had been wakened to take food. Captain E. C. Jones, Medical Corps, U.S. Army, has an article on military dogs, and mentions that three ambulance dogs after a battle in Manchuria found 23 wounded men when the Russian stretcher-bearers thought they had brought all in. He also tells how police dogs are used in New York City to assist policemen on patrol and notes that they prevent burglaries, finding concealed thieves so certainly that burglaries are not now attempted. Lutz, the French scout dog of Verdun, is mentioned, whose growling on Feb. 21st, 1916, gave the first warning of the German advance.

Maternity and Child Welfare. Vol. I., No. 5, May, 1917. 6*d.* net.—The plan adopted in this periodical of publishing several short articles on the same subject written from different points of view is a good one. This month the crêche is discussed in this way. The Atlas and Gazetteer of Child Welfare work is interesting; the Newcastle-on-Tyne district is dealt with. An article on the Federation of Hospital Treatment for Children, by Dr. C. J. Macalister, outlines a scheme for providing adequate treatment for sick children by the coöperation of the various hospitals and convalescent homes in any given district, with the Invalid Children's Association as a clearing-house. Such a scheme is already in force at the Royal Southern Hospital, Liverpool, and as the writer remarks, "If this can be done in connexion with one hospital, why should it not be carried out in connexion with them all?"

Correspondenz-Blatt für Schweizer Aerzte. 49. Jahrg. 1917, May 12. Basle: Benno, Schwabe, and Co.—Professor A. Jaquet recently retired from the controlling editorship, after being associated with the journal since its commencement 24 years ago, being succeeded by Dr. E. Hedinger, professor of pathology in Basle University, whose influence is seen in the present number, which contains nine closely printed pages of excellent abstracts from German, French, and English medical literature. Dr. Huber-Pestalozzi, of Zürich, writes on the treatment of gonorrhœa in Swiss troops at Solothurn, where he has carefully observed Ziegler's postulate not to interfere with the natural and beneficial hyperæmia and inflammatory reaction of the urethral mucous membrane so long as gonococci still remain.

New Inventions.

A NEW NEEDLE FOR THE INJECTION OF ARSENO-BENZOL PREPARATIONS.

A NEEDLE which I have devised for intravenous medication differs from previous needles used for a similar purpose in that it has a handle placed on the upper surface of its mount and over the centre of gravity of the instrument (see Figure), this giving a perfect sense of balance. The mount is of a special shape and is considerably longer than usual. In practice the needle is held by its handle (not by the mount as is the usual method), when it will be found that the "grip" so obtained imparts to the instrument a greater delicacy of touch than has hitherto been possible, and the surgeon can with the utmost ease give to the point of the needle every gradation of movement which may become necessary in order to ensure its entry into a vein; in this way the perception of control is absolute. The mount is 1¾ inches long and takes the form of a square pyramid of such dimensions that when the instrument is lying on a horizontal surface the shank of the needle is directed downwards, thus ensuring that the point remains within the lumen of the vein after it has once been introduced. Further, by virtue of the length of the mount and from the fact that each of its four surfaces is flat the mount lies fairly and squarely on the skin while the injection is being made. In actual use the needle has been found to give extremely good results.

The needle has been made for me by the Holborn Surgical Instrument Co., of Thavies Inn, Holborn-circus.

H. W. ABBOTT, M.R.C.S. Eng., L.R.C.P. Lond.

THE LANCET.

LONDON: SATURDAY, JUNE 9, 1917.

Labour Conditions in Factories and Workshops.

THE annual Report of the Chief Inspector of Factories and Workshops for the year 1916 does more than chronicle the sanitary and industrial improvements which a third year of work under war conditions has produced. Perusal of it causes us to realise that out of the horror of war some good, at any rate, may result, and that our industrial workers in the future will profit by the revolutionary changes in their position brought about by the pressure of evil circumstances. The vast scale of the munition works has led to consequences in connexion with the pay and supervision of the workers which have necessarily affected other industries, and when the demand for munitions has ceased, and when those engaged upon producing them are released for other employment, the changed conditions will remain. The institution of "welfare supervision" has mainly followed upon the requisition of women as workers, and the change which their employment has produced may rank among the most important of the social results of the war. The Deputy Chief Inspector of Factories, Mr. H. M. ROBINSON (who signs the report in the absence of Sir ARTHUR WHITELEGGE through illness) shows how necessary the provision of suitable sanitary accommodation for women was found to be in the varied industries where they were able to replace men of fighting age and condition.

Miss A. M. ANDERSON, the Principal Lady Inspector of Factories, adds to the report a series of observations upon the Effect of the Third Year of War on Industrial Employment of Women and Girls, and those are of great interest and importance. In dealing with the general question of the substitution of women for men in industry Miss ANDERSON has definite information to give upon the performance by women of work which was generally believed to be outside the scope of their physical powers. There will always be some work which for physical reasons must be done by men—the fact that some strong women are the physical superiors of some weak men does not alter the case—and Miss ANDERSON finds the limit to the replacement of men by women to lie in certain heavy occupations where adaptation of plant and appliances cannot be effected so as to bring the processes to be carried out within the compass even of selected women. But excluding these occupations, Miss ANDERSON describes the result of judicious selection even in fairly heavy work to have been striking, adding that "it is permissible to wonder whether some of the surprise and admiration freely expressed in many quarters over new proofs of women's physical capacity and endurance is not in part attributable to lack of knowledge or appreciation of the very heavy and strenuous nature of much of normal pre-war work for women, domestic and industrial." That comparatively heavy work is unsuitable for women in itself, and is likely to injure them physically, is apparently not in any way demonstrated by the facts observed by factory inspectors. There appears to be no record of women giving up work on account of it being too heavy or having caused them physical injury, so that to estimate the extent to which such results have occurred or may occur is not possible; but we are told that it is rare to receive a complaint as to the heaviness of her job from a worker, and "the keenness, especially of very young girls, for work at present is pathetic," according to an inspector's report quoted by Miss ANDERSON. For this keenness, and for a zeal to undertake the class of work which has before been reserved for men, one main cause may be assigned. The allotting of rates of pay to women which have hitherto been for men only has had a peculiarly enheartening and stimulating effect, the difficulty being not to find women to undertake men's work at men's rates, but rather, when women have left what have been regarded as women's industries, to replace them in civil employ at the rates of pay prevailing hitherto for women. The result has been what might have been expected. In industries not connected with the manufacture of munitions employers are finding themselves compelled to offer higher wages, as well as to adopt measures for securing the comfort and health of those employed which go beyond the bare demands of the Factory Acts. That the results obtained will be permanent appears to us to be almost beyond question. The importation of women endowed with strength and intelligence in large numbers into the industrial market might have tended to reduce wages and render employers indifferent to the importance of hygienic conditions and all that welfare supervision implies, and may still do so if and when a glut of labour occurs after the war; but in the meantime good wages and, more recently, welfare supervision have contributed with patriotic zeal to bring women into the various industries in which they have now acquired training, and these conditions, once established, will be maintained.

From the whole document one thing emerges with particular clearness, and that is the importance of welfare work among the industrial population, and there seems to us no reason whatever why this work should not be found valuable among male workers as well as among female and juvenile. The case of the latter is more obvious, but it has long been recognised by good employers that much in this direction can be done for male operatives. The influence of overtime work, for example, is probably the same in both sexes, and it is a subject the scientific study of which has been much neglected in this country. But the war has brought it to the front, and it finds prominent notice in Mr. ROBINSON'S report. It is well recognised that continuous and excessive overtime produces a weariness and want of concentration among the

workers which detract from their efficiency—both the quality and the quantity of the output suffer. This point is established over and over again by examples supplied by the inspectors of factories and workshops, and these records, made at a time when the maintaining of the amount and quality of the work has been of vital importance, should do much towards providing for the workers of the future proper conditions of relaxation. It is not necessary to conjecture in what exact directions the currents of industry will flow when war is over to be perfectly certain that workers in the future will not submit to spend their lives in circumstances which they know can be brightened, or in an environment which they know can be rendered less harmful; and all medical opinion will welcome the establishment of this spirit. In the future there will be a demand, and one that cannot be refused, for healthy conditions of life on the part of the operative, and the creation of those conditions in our industrial centres will be insisted upon by an educated and enlightened public opinion. Thus, at any rate, the war will not have produced only misery and sorrow—the fruitless expenditure of wealth and of human life.

Mental Defect and Criminality.

THESE are days of strenuous medical effort and of natural pre-occupation with things military, but it would be matter for regret were the medical profession to overlook two papers, under the modest title of "Notes," contributed by Sir BRYAN DONKIN to recent issues of the *Journal of Mental Science*. Their purpose, briefly, is to comment on a few of the many questions that have arisen of late years out of the problem of the feeble-minded, and in particular on that aspect of the subject which is concerned with the connexion between mental defect and criminality. There are certain topics which have peculiar attraction for the clever, if non-expert, layman, who believes himself competent to deal with such on the basis of what he, a little complacently, calls the scientific method. It is remarkable how frequently the written productions of these men are dubbed "authoritative" by lay press reviewers, and hence become active in misleading serious inquirers. The authors often reveal a high order of cleverness, but it is usually coupled with a less high order of intelligence, and this is particularly true of the increasing literature on criminality, especially in its supposed relationship to mental defect. With no clear perception, or consistent use, of such terms as "crime," "criminality," "heredity," "degeneracy," which denote the very topic of discussion, the pseudo-scientist rushes in where the expert treads with hesitation, and effectually obscures the subject with a cloud of generalisations which will not stand critical analysis. Sir BRYAN DONKIN, than whom few, if any, can speak with more deserved authority, mercilessly pillories these "crude, ill-worded, and ill-considered statements, vitiated by undefined and nebulous terms, and further confused by 'cross divisions.'"

By dint of uncritical repetition of self-styled "scientific" investigations, absorbed in equally uncritical fashion by the reading public, who are unable to distinguish the rôle of the genuine research-worker from that of *vulgarisateur*, the Lombrosian theory that criminals are racial degenerates, and that criminality is hereditary, innate, or constitutional, has found wide acceptance, even in the ranks of the criminal. Sir BRYAN DONKIN, in an interview with a fairly intelligent convict, was informed by him with the assurance of a Hyde Park lecturer that a long course of misconduct was due to the "inheritance of his constitution from a drunken father," while another habitual offender said that as society manufactured criminals it ought not to blame him but to answer for him. If the criminal is born to crime, so must the law-abiding individual be born to abide by the law—an equally natural and equally effortless part to play; but the upholders of the doctrine of the born criminal do not appear to grasp this corollary. Another aspect of this particular doctrine of the born criminal may be alluded to. When it is carried to its logical conclusion we are landed in the metaphysical depths of determinism and irresponsibility; the human organism becomes a complex of reflex automatisms. But in practical life a general ability to choose one's lines of action is assumed; we *act* as though this is so, whatever be our attitude towards theoretical doctrines. In Sir BRYAN DONKIN'S words, the dispute about free will concerns the matter in hand no more than the actual conduct of some men depends on the opinions they hold on the nature and relation of mind and matter.

From long and patient scrutiny of the facts of criminality Sir BRYAN DONKIN states authoritatively that there are no special qualities, physical or mental, common to all criminals, and that criminality is no "unity"; he maintains, further, that the sole link between criminality and heredity is the occurrence of a larger proportion of congenital mental defectives among convicted criminals than in the population at large. All men are potential law-breakers; it is the traditional, not biological, heritage of moral or social experience that saves them. Perhaps the most interesting section of these illuminating contributions to a vexed subject is that in which the author draws clear distinction between inheritance and reproduction in its strict sense. We would urge social workers and other lay authorities to familiarise themselves with the significance of the following teaching, which is based on the work of ARCHDALL REID. So far from a man's "make-up" being referable *either* to natural—i.e., inborn—agencies *or* to acquired factors—i.e., use, experience, education, and so on—human characters are derived *both* from an inborn capacity for developing them *and* from some external stimulus appropriate for their development. There is inheritance without reproduction, but no reproduction without inheritance. It is, of course, a truism that the existence of any quality or character in an individual implies the inheritance of the capacity of development of these qualities or characters; this is true of everything that can be called a

"character" at all, and true of all human beings, social or antisocial. The problem, then, is to account for the actual outward expression of these innate capacities in the individual concerned. What of the innumerable influences that act on men from the cradle onwards? How often is it not said by one or other that he "owes" everything to the influence of some parent, friend, guardian? Men's characters are moulded by their environment in a fashion that no amount of statistical juggling can eliminate; the waifs and strays that enter some of our well-known charitable homes in abundance are weighted, to a high degree in many instances, by the inheritance of criminal capacities, but are these capacities reproduced? The whole fabric of training-ships, schools, homes, and reformatories would vanish at once were potentialities uninfluenced by external actualities. In short, human beings, from criminals to saints, as Sir BRYAN DONKIN says, are the products of their environment as well as of their heredity, but not of the one without the other. This is the view which should be kept steadily in the front in all our attempts to deal with the problem of the mentally defective.

Annotations.

"Ne quid nimis."

THE BIRTHDAY HONOURS.

THE Birthday Honours list issued on Monday last by the Prime Minister appeared contemporaneously with an extended list of honours and promotions directly connected with the conduct of the war. These latter honours, as far as they affect the medical profession, will be found on page 893. We give here a list of the members of the medical profession included among what may be termed the strictly birthday honours, though it is obvious that the recipients have in some cases rendered distinct military service. Dr. Frederick Taylor, President of the Royal College of Physicians and of the Royal Society of Medicine, receives a baronetcy, and knighthoods have been conferred on Professor T. K. Dalziel, Lieutenant-Colonel, R.A.M.C. (T.), lecturer on clinical surgery at Glasgow University; Mr. H. F. Waterhouse, Dean of the Medical School and lecturer on surgery at Charing Cross Hospital, lately surgeon-in-chief to the Anglo-Russian Hospital at Petrograd; and Colonel Robert Jones, C.B., A.M.S., Inspector of Military Orthopædic Hospitals, to whose labours are largely due the existence and efficiency of these institutions up and down the country. Lieutenant-Colonel C. A. Johnstone, D.S.O., I.M.S., has been appointed a C.B. in the Military Division. In the Colonial Office list, Mr. T. Hood, Director of Medical and Sanitary Service, Nigeria, and Dr. F. T. King, medical superintendent of the Seacliff Mental Hospital, New Zealand, have been appointed C.M.G.'s; and knighthoods have been conferred upon Surgeon-General E. Fiset, C.M.G., D.S.O., Deputy Minister of Militia and Defence, Canada, and on Mr. E. C. Stirling, C.M.G., professor of physiology in the University of Adelaide. In the Royal Victorian Order the C.V.O. has been conferred upon Captain R. R. Cruise, R.A.M.C. (T.), ophthalmic surgeon to King Edward VII. Hospital for Officers, and attached to the 3rd London General Hospital. The list includes the following Indian honours: Colonel Hormasjee Eduljee Banatvala, I.M.S., Inspector-General of Civil Hospitals, Assam, receives a C.S.I.; Lieutenant-Colonel D. W. Sutherland, I.M.S., Principal of the Medical College and School, Lahore, and Lieutenant-Colonel J. Anderson, I.M.S., retired, member of the Medical Board of the India Office, each receive the C.I.E.; while Captain R. H. Bott, I.M.S., professor of surgery at the Medical College, Lahore, and Dr. Behari Lal Dhingra, chief medical officer, Jind State, have been awarded the Kaisar-i-Hind Medal of the first class. In the name of the medical profession we congratulate all these recipients of deserved honours.

BLOOD PRESSURE AND LIFE ASSURANCE.

THE observation of the arterial blood pressure in examinations for life assurance has of late years become common, especially in America; it is required by the medical forms of some companies, especially when the proposer is over 40 years of age. The value of the record is, nevertheless, uncertain; it is usually only the systolic pressure which is given and on a single occasion; the reading varies under manifold temporary influences, and it is difficult to distinguish between these and more permanent organic causes of altered pressure. Efforts have been made to place the practice on a firmer scientific basis. In 1911 statistics were published by Dr. J. W. Fisher of the mortality of persons with increased blood pressure accepted or declined by the North Western Mutual Life Insurance Company in the United States. These showed a greatly increasing death-rate when the systolic pressure was over 150 mm., but the period of observation was only four years. Dr. F. de Havilland Hall laid some similar records before the Medical Society of London in 1912.[1] Two recent meetings of the Assurance Medical Society in London, on March 7th and May 2nd, were occupied with an attempt to elucidate the pathology of increased pressure. Dr. H. Batty Shaw brought forward an elaborate study of 50 cases of persons dying in hospital from various diseases, in whom "hypertension"—i.e., systolic readings of 150 mm. or over—existed. Besides summaries of sex, ages, occupations, and symptoms, detailed reports of post-mortem examinations were given, especially of the kidney condition microscopically. Numerous charts of the pressure readings showed great variation from day to day, even in uniform hospital conditions, and in some an intermittency hard to explain. The author was led by his studies to regard hypertension as a disease of "pre-renal" site and origin, so far in seeming accord with the theory of Gull and Sutton, who placed the vascular disorder prior in time to that of the kidney. Sir Richard Douglas Powell regarded the two conditions as independent, though often associated, and Sir T. Clifford Allbutt pointed to cases in which there is simple increased blood pressure, while he would class the majority of high-tension cases as renal. Many points of interest were raised by other speakers, and the importance of the subject can hardly be exaggerated. In one group of instances alluded to by Dr. Hingston Fox increased pressure was held to be due to temporary causes, and such a condition is often toxic from alimentary or hepatic disorder. In life assurance work such cases should

[1] THE LANCET, 1912, i., 1406.

be postponed for a second examination after suitable treatment; mercurials, salines, and a restricted diet generally reduce the tension. A considerable range of blood pressure is consistent with good health. With some the systolic pressure is naturally high, and such persons may lose their sense of well-being if it falls below 140. There is, again, the subject with habitually low pressure, who is fain to get up and walk about his room to help him to think. In view of the natural rise with age, especially at the climacteric, a periodical testing after the age of 40 years would be a good practice. No decisive indication as to the effect of tobacco on blood pressure has been reached. In an extreme instance quoted by Dr. H. W. Collier, a man of 34 had smoked very largely since childhood: his systolic reading was only 98. The relative importance of systolic and diastolic pressures was raised by some speakers at the discussion before the Assurance Medical Society; records were submitted, and it was urged that the diastolic readings, indicating the minimal constant pressure in the artery, gave a truer indication of the strain upon the vessel, and were much less under the influence of posture, exercise, and emotion. Others objected that reliable diastolic readings were difficult to obtain. We may point out, however, that, thanks to the late George Oliver and to Professor MacWilliam, of Aberdeen, the auscultatory method has now been developed in a form easy to practise. Further observations are needed, and the influence of peripheral resistance, and the modern view of the stimulation of a weak ventricle by automatically induced increase of pressure must, among other factors, be taken into account. But it seems likely that diastolic pressure records will in the future attain increased importance for purposes of prognosis.

THE FOOD ALLOWANCE FOR BOYS AND GIRLS.

THE medical officer of health of Bristol City, Dr. D. S. Davies, has recorded a recent experience of revising the dietary of an institution for growing boys which has warned him that considerable lifelong injury might be caused to boys and girls by insisting upon a too strict régime in their cases. Of course, the needs of the growing and developing individual are more important than those of the adult, and this point has already received official attention, for in one of the pamphlets published by the Ministry of Food it is rightly stated that children need plentiful food for three reasons: first, their surface is large compared with their weight; secondly, they are growing; and thirdly, they are almost always very active compared with many adults. It is generally conceded that a child of 8 needs half as much as a grown-up and a child of 12 three-fifths as much, while a girl of 16 needs as much as her mother and a boy of 16 may eat as much as his father. In these cases the foundations of fresh tissue for development are being laid down, and this goes on until the phase is reached of complete manhood and womanhood. Upon the conditions of nutrition of growing boys and girls depends the future physique and mentality of the race. Parents and guardians will do well to bear this in mind when the question of rationing juveniles is being considered. Food should not be dealt out to these in proportion to age, the children getting but a fraction of the dose for an adult. The parent must spare for the child.

THE MEDICINAL USE OF GLYCERINE.

THERE is now no glycerine being allotted for medicinal purposes, and pharmacists who have exhausted their supply can only obtain more by borrowing from those who have some left. As we noted four months ago the Ministry of Munitions considered that the stocks then in the hands of pharmacists should be sufficient to meet the legitimate demands of prescribers. An analysis of prescriptions undertaken by the *Chemist and Druggist* 30 years ago showed that glycerine came out ninth on the list of favourite drugs, and its use both in mixtures and as a toilet preparation has probably much increased since then. But neither as a solvent, a demulcent, or a flavouring agent is glycerine at all indispensable, and medical men would do well to assist the pharmacist in restricting its use to the few remaining purposes—perhaps in the case of calf lymph or in organo-therapeutic extracts—in which hardship would result from its withdrawal. It should hardly be necessary to point out that to prescribe glycerine freely in a lotion might place the conscientious pharmacist in a difficult position. He is prohibited by law from supplying it direct to one customer for toilet purposes, and it would be invidious for him to supply it to another customer for the same purpose on a medical man's order.

ANÆSTHETICS IN MILITARY PRACTICE.

THE adminstration of anæsthetics at or near the front was described recently in an admirable paper by Captain Geoffrey Marshall before the Section of Anæsthetics of the Royal Society of Medicine.[1] The author, in spite of the stress and hurry of a busy casualty clearing station, made scientific clinical observations on a number of cases, and his conclusions form a valuable addition to our knowledge of the factors that should indicate the choice of anæsthetics and the methods of administration in the exceptional conditions of shock, hæmorrhage, and septic toxæmia. Perhaps the most striking lesson which Captain Marshall draws from his observations is the danger of chloroform and of spinal analgesia in the presence of the combination of shock and recently produced anæmia. In civil practice we are familiar with the baneful effect which anæmia has in influencing the behaviour of the anæsthetised subject; when that anæmia is grave and recently produced the effect is so pronounced that the proper selection and administration of the anæsthetic may make the difference between life and death. The use of "gas and oxygen" or of warmed ether vapour should result in saving lives in these critical cases.

PREPAREDNESS.

THE April number of the *Military Surgeon* opens with a paper entitled "An Apostle of Preparedness," discussing the teaching of Lauder Brunton, and written, of course, before the United States had come into the war. The writer, Dr. Fielding H. Garrison, lieutenant in the Officers' Reserve Corps of the U.S. Army, addresses himself particularly to the volume of essays on physical and military training written by his old teacher in the last 17 years of his life. Brunton secured less popular support for his views than they deserved because he tried too openly to introduce

[1] THE LANCET, 1917, i., 615.

a disciplinary spirit into the games of children when the value of such a spirit was not apparent to a public living in a fool's paradise. His essays breathed a spirit of patriotic anxiety, and we can see now that their comprehension might have provided us with better recruits for the war, besides making the training of those recruits more even and freer from the occasional disasters which are noted clinically as "disordered action of the heart." Exercises, Brunton thought, should be generalised, those that educate only particular groups of muscles requiring to be corrected by games; and exercises should be only gradually increased lest over-exertion cause wasting of the muscles involved, impairment of the respiration, and strain and consequent weakness of the heart. He noted that the Russian recruit, when he left the army and returned to his village, could nearly always get 25 to 50 per cent. higher wages than the other young man who had not had his military training, and that in Switzerland, where only 75 per cent. of the young men were found fit for service, and only the best of these were selected for training, not to be accepted as a volunteer was regarded as a disgrace. This readiness and training for service may have saved Switzerland from disaster in the war.

THE DIAGNOSTIC CHARACTER OF EFFUSION IN MELANOTIC SARCOMA.

IN the *American Journal of the Medical Sciences* for May Dr. C. C. W. Judd has called attention to the diagnostic character of the effusion in melanotic sarcoma—an important point, as the diagnosis is often missed before an operation is performed. In two cases the usual characteristic signs—melanuria, pigmentation of the skin, or suspicious tumour of the skin or choroid—were absent, but fluid obtained by paracentesis showed almost identical appearances. When agitated it was quite opaque, even in thin layers. On standing, a dense, dark, brick-dust sediment formed, while the supernatant fluid, though intensely pigmented, was clear and of a dark reddish-brown colour. The surface layer was slightly iridescent, with a predominant greenish tone. The foam obtained by shaking had a tendency to a pinkish hue in the first case and to a dirty olive-green in the second. The supernatant fluid when tested with perchloride of iron gave no reaction for melanogen, but on addition of bromine water a yellow cheesy precipitate formed, which became much darker on standing, and finally black, indicating that the formation of melanin from melanogen had been completed during life. Tests for bile pigment were negative. Microscopically the sediment showed red corpuscles, epithelial cells, numerous leucocytes, and many tumour cells containing the typical pigmented granules of melanoma. In the first case the patient was a spinster, aged 40 years, who began to spit blood on May 1st, 1914, and to lose weight and strength. Examination on May 15th showed at both apices loss of resonance, prolongation of expiration, and numerous fine râles after coughing. Early tuberculosis was diagnosed. She was admitted to a sanatorium and her temperature seemed to confirm the diagnosis. She improved, but continued to expectorate sputum streaked with blood for eight months. The adventitious sounds largely disappeared. The sputum was repeatedly examined, but never showed tubercle bacilli or any cells suggestive of malignant disease. On Jan. 6th, 1915, she felt slight pain on the left side, and a few days later she felt a gurgle within the chest. Ten days later there was dullness at the left base with skodaic resonance above. Hydropneumothorax was diagnosed and puncture showed the effusion to be "bloody." On Feb. 13th paracentesis was performed to relieve pressure symptoms. The pleura at the sixth interspace in the axillary line was markedly resistant to the introduction of the needle. Twenty-four ounces of coffee-coloured fluid were removed. Reaccumulation necessitated repetition of the operation about every five days. The fluid obtained on Feb. 24th was the first to reach Dr. Judd, and had the characters given above. At the site of the first puncture a pigmented growth developed. Death occurred on April 6th. The necropsy showed melanoma of the lung. In the second case the patient was a very dark man, aged 34 years, who suffered from great abdominal enlargement. There was almost general dullness, which did not alter with posture, but fluctuation was elicited. Paracentesis yielded three litres of coffee-coloured fluid, with the characteristics given above. In the right upper quadrant a firm indefinite mass was then felt. Two days later the skin, which had been dark and slightly sallow, showed numerous small dark moles. As the patient was relieved he insisted on leaving hospital.

CHINA AND WESTERN MEDICINE.

IN calling attention a year ago[1] to the holding of the first annual conference of the National Medical Association of China, we predicted that progress was likely to be rapid. This opinion is confirmed by the report by our correspondent on p. 889 of the second conference held jointly with the China Medical Missionary Association, at which it was resolved to establish a central medical council for China with functions similar to those executed by our own General Medical Council—e.g., to fix a standard of medical education, to draw up a code of regulations, and adopt a uniform system of medical nomenclature. At the two sessions of the conference the presidents of the two associations—Dr. W. H. Venable, of Kashing, and Dr. Wu Lien-teh (known in this country as G. L. Tuck)—occupied the chair alternately. Much remains yet to be done in overcoming the prevailing conservatism of the Chinese in medical matters, which is in striking contrast with the receptivity of their Japanese neighbours. In the June number of the journal of medical missions, issued by the Church Missionary Society, Miss P. S. Tsêng, B.Sc., the first Chinese woman graduate of London University, speaks of the deeply-rooted prejudice of the Chinese against operations, a prejudice only overcome to any great extent in the coast provinces where the work of the missionary hospitals is seen and appreciated. She quotes an alarming figure for the incidence of tuberculosis in such a crowded centre as Hangchow, giving it by hearsay as 70 per cent. of the population. In view of this it is satisfactory to note the progress made in the opening of new hospitals and centres of medical work. The Central Hospital at Peking is to be opened in the coming September, the China Medical Board of the Rockefeller Foundation having entirely taken over responsibility for the Union Medical College with its annual budget of $53,000, and placing Dr. Franklin C. McLean, a

[1] THE LANCET, 1916, ii., 332, 336.

graduate of Chicago and Rush, at its head. The Board is also establishing a medical college in Shanghai, as well as offering liberal support to all missionary hospitals within easy reach of those centres in which medical schools exist. This enlightened policy of the China Medical Board, which also grants fellowships in the United States for graduates of Chinese medical colleges, cannot fail to have a beneficent influence on the development of Western medicine in China.

THE MINISTRY OF PUBLIC HEALTH.

WE understand that the Cabinet has favourably considered the scheme laid before it for the establishment of a Ministry of Public Health, and that the views of the Friendly Societies are to be taken on the subject. Whatever form the administrative centralisation of public health matters may assume, there is no reason to believe that the turning of the medical man into a State official will play an essential part in the scheme; but the general practitioner, whether in panel practice or no, will welcome any opportunity offered of making his point of view felt.

THE DISEASES OF ANIMALS DURING THE YEAR 1916.[1]

THE annual incidence of the diseases of animals is always of more than passing interest to the medical profession, as there are a number of diseases transmissible from animals to man. Rabies, anthrax, glanders, and mange may be cited as the principal ones, and statistics of their prevalence are given in the latest report of the Board of Agriculture and Fisheries. Rabies attracted attention this year by the occurrence at Oldham of a suspected case in a dog. Due precautions were taken, but it was eventually decided that the case was not one of rabies. The control of anthrax and glanders is now of especial importance on account of the large numbers of animals grouped together under war conditions, and the fact that no great outbreaks have occurred speaks volumes for the methods adopted by the Veterinary Department. Glanders especially, a disease which used to be the scourge of armies in war-time, is practically non-existent. If a case does occasionally occur, the weeding out by means of the mallein test is such a simple matter that the veterinarian has not now the slightest dread of this disease. Foot-and-mouth disease has given a little more anxiety, but the outbreaks were quickly got under control and the country is again free. The report concludes with tables of statistics.

Dr. A. E. Shipley, F.R.S., Master of Christ's College, Cambridge, has been elected Vice-Chancellor of the University for the year beginning Oct. 1st.

A MEETING of the Section of Medicine of the Royal Society of Medicine will be held on Tuesday next, June 12th, at 5.30 P.M., when Major Aldo Castellani will give a lecture, with lantern demonstration, on Tropical Diseases to which the Allied Troops are Exposed in the Balkanic Zone. We call the attention of our readers to a meeting which is sure to be of exceptional interest because the notice has been unavoidably very short.

[1] Annual Report of Proceedings under the Diseases of Animals Acts for 1916. Published by the Board of Agriculture and Fisheries at H.M. Stationery Office. 1917. Price 3d. net.

THE ANTISEPTIC "FLAVINE" (ACRIFLAVINE).

THE following has been officially communicated to the press by the Medical Research Committee:—

The incomplete statements which have appeared from time to time in the press with regard to the antiseptic "Flavine" have necessarily led to some misapprehension of the situation by the public. The impression has been created that flavine is a substance of magical potency which can cure infected wounds, and that there has been an unnecessary delay in making supplies of it available for general use. It should be realised that no antiseptic, even a theoretically ideal antiseptic when that is obtained, can ever be more than an adjunct to skilled and thorough surgery. Flavine must be thought of accordingly in relation to the other new antiseptics which have been brought into successful use during the course of the war.

These fall into two main classes. One depends upon the use of chlorine compounds, as in the well-known "Eusol" introduced by Edinburgh workers, the similar "Dakin" solution and the more recent chloramine-T, introduced by Dr. Dakin from the Leeds laboratories. These have wide use in our armies, and are now known all over the world. The researches from which these arose, and which are still in progress, have all been supported from the beginning by Government help through the Medical Research Committee. The second class, to which flavine belongs, includes the elaborate compounds of which most are brilliantly coloured and are used as dyes. From the first month of war special searches have been made among those on behalf of the Research Committee for unrecognised antiseptics of high value. Work at Haslar and at the London Hospital for the Committee showed very early the value of malachite green, and this is giving valuable routine results in naval hospitals and elsewhere. When it was desired to investigate flavine, which was a little-known but patented German dye, none was available in this country, and its manufacture requires highly skilled and laborious work. The Committee, however, caused a supply to be specially made in their Biochemical Department for investigation by Dr. Browning at the Bland-Sutton Institute. His remarks were first published in January, 1917. Three months previously, however, as a result of the first preliminary experiments, the Committee arranged that preparation should be made for the difficult processes of commercial manufacture, and all the scientific information at their command was made freely available. As a result of this early action they were able to supplement their own supply in use for the first laboratory experiments and clinical trials by a large number of samples, which were sent in April to a selected group of consultant surgeons to the Forces and other responsible surgeons for the purpose of securing official reports for the guidance of the Admiralty, the War Office, and civilian institutions, whose action could not rest upon any single testimony or any small-scale supply of the antiseptic. It is already clear that the special uses of flavine for particular purposes have still to be carefully defined in relation to other antiseptics and to the operative methods of surgery, to which it can at best only be a valuable aid. While this concerted official study is in progress two or three firms are already preparing for commercial supply to the public. Under our patent law it has been necessary for them to procure licence to manufacture from the Board of Trade. The hearing of applications for licences has already taken place, and it is hoped that licences to manufacture will very shortly be issued by the Board. It is proposed that all the manufacturing firms shall use one and the same name for the substance, a condition which will restrain any firm from securing monopoly privileges by wide advertisement of a fancy name. The Medical Research Committee have proposed for important technical reasons that the substance shall be officially called "Acriflavine" in this country. This will avoid the German name "Trypaflavin," which is registered as a trade-mark, and prevent confusion with an existing vegetable dye already called "Flavine." No doubt the firms concerned will announce at the earliest moment their readiness to supply acriflavine commercially.

During the progress of this work the Committee have more recently put at Dr. Browning's disposal for study a

compound closely allied to acriflavine which already appears to have identical or even superior properties, and if this be confirmed it will be easier to manufacture and cheaper for the public. This substance will be officially known as "Proflavine." An early scientific publication will be made on this subject.

The degree of Government support which has been given from the beginning to the researches upon acriflavine and other antiseptics has not always been made a matter of public knowledge. It is proper that financial and scientific help given officially should not diminish in any way the credit due to individual scientific workers or scientific institutions.

MEDICAL AFFAIRS IN CHINA.

(FROM OUR OWN CORRESPONDENT.)

The Peking Central (Model) Hospital.

AN important landmark in the progress of medical science in China is the approaching opening of the Peking Central Hospital next September. This hospital, when completed, will be the most up-to-date in the land, whether foreign or Chinese. The Government has supplied half the funds, and the other half has been obtained by public subscription. It will be managed by a Board of Trustees, whose qualification to office will be a subscription of at least a thousand dollars. The moving spirit of this deserving institution is Dr. Wu Lien-teh, who has travelled all over China and even as far as the Straits Settlements to enlist the support of wealthy Chinese. It is intended as a model in equipment and management, so that the thousands of officials who visit Peking may carry back with them some idea of the enormous advances which medicine has made in other parts of the world.

The hospital is a thoroughly modern structure, with central hot-water heating and the latest plumbing. The building is grey, with a red tile roof, and is beautifully situated, for from the roof garden of the west wing there is a lovely view over the hills, while from that of the east wing the renovated Mongolian pagoda of the Winter Palace and the temples of the Coal Hill are clearly visible. The whole building is of reinforced concrete, and is the only really fireproof structure in Peking. All the accommodation of a modern hospital is provided—that is to say, that in addition to the general and special wards, examination- and waiting-rooms, bathrooms and lavatories, and service block, there is a special-diet kitchen, analytical and bacteriological laboratories, private wards, and roof-garden shelters for heliotherapy and the restoration of convalescent cases.

Hong-Kong University.

At the first Convocation of the Hong-Kong University degrees were conferred for medicine, engineering, and arts. The most interesting part of the ceremony was the conferring of honorary degrees by the Governor of Hong-Kong, officiating as Chancellor. Of the five recipients of honorary degrees, two were Frenchmen and three Chinese. Both Frenchmen had contributed much to the knowledge of archæology in the Far East. The three Chinese were Sir Robert Hotung, a leading merchant in Hong-Kong, who among his considerable benefactions to the University founded the chair of clinical surgery; Mr. Jeme Tien Yow, a famous Chinese railway engineer; and Dr. Wu Lien-teh (G. L. Tuck).

The Resolutions of the Recent Joint Medical Conference.

I referred in my last letter to the two resolutions concerning the control of morphine and the institution of a Central Medical Council for China, passed by the Joint Medical Conference recently at Canton. I now send the text of these clear pronouncements.

The following is the resolution regarding the control of morphine:—

Whereas the National Medical Association and the China Medical Missionary Association, in joint conference assembled, have heard with deep concern of the enormous and rapidly increasing importation into China of morphine, and whereas such importation is largely surreptitious, therefore be it resolved that the National Medical Association and the China Medical Missionary Association place on record their conviction that the uncontrolled use of this drug will do far more harm to the nation than was ever done by opium, and believes that this imminent danger can only be averted by the Chinese Government enforcing without delay the provisions of the Hague Opium Convention of January 23, 1912 (including adequate pharmacy laws) so as to confine the employment of morphine to legitimate medicinal uses.

The following is the resolution regarding the formation of a Central Medical Council:—

Whereas during the Joint Conference of the National Medical Association and the China Medical Missionary Association great emphasis has been laid by the President of the National Medical Association on the need for a central organisation which shall regulate the curriculum and standards of medical schools throughout China, and shall control admission to the practice of Western medicine in this country; and whereas the experience of other countries has clearly shown that only by such centralised organisation can orderly progress be attained; and whereas the National Medical Association has expressed its belief that joint action in the matter is desirable at this time; therefore be it resolved, that this joint conference of the National Medical Association and the China Medical Missionary Association records its belief that only by the creation of a Central Medical Council can the needed regulation and control be effectively secured. Such council should include among its duties: 1. The fixation of a minimum standard of general education required of students before entering upon medical studies. 2. The maintenance of a student register on which the names of all who, having complied with the entrance requirements, have commenced the study of medicine shall be recorded. 3. The fixation of a minimum medical curriculum. 4. The supervision of examinations. 5. The recognition of hospitals where medical students and graduates may obtain clinical teaching. 6. The drawing up of laws and regulations affecting the medical profession in China, and their enforcement. 7. The issuing of a medical register containing the names of all those qualified to practise Western medicine in China. 8. The adoption of a general nomenclature of medical terms in Chinese. And further, that in view of the rapid increase in the number of students and practitioners of Western medicine in China, this conference requests the National Medical Association to approach the Board of Education with a view to the formation of such a council at an early date.

NATIONAL HEALTH INSURANCE.

The Public and Panel Practice in Birmingham.

IN our issue of May 19th we dealt with the comments of the London Panel Committee on the recent circulars D 8 and D 9 addressed by the British Medical Association to various bodies interested in the administration of National Insurance. In Birmingham a committee jointly appointed by the Panel Committee and the Executive Committee of the Central Division of the British Medical Association have arrived at conclusions not far differing from those formulated by the London Panel Committee. General satisfaction on the part of the insured is recorded, based upon evidence as to diminishing numbers of insured persons seeking medical advice as private patients, as to few changes of doctor at the end of each year, and few complaints coming before the Medical Service Subcommittee. The causes of dissatisfaction, where it exists, are stated to be principally lack of sufficient and appropriate examination, and insufficient attention, which cannot be wholly ascribed to war conditions—grounds of complaint which are admittedly serious when they are proved to occur. Certification difficulties and lack of uniformity in the procedure of different societies are also matters suggested for future reform. The medical man who is entirely devoted to panel work is said to give the most satisfaction to his panel patients. The number of general practitioners who have not joined the panel in the district under comment is about 80, as compared with about 260 who have done so. The report does not express any expectation that those now declining panel service would be induced to come in, even under the improved conditions which it considers practicable. A sufficiency of private practice, a dislike to being tied by contract, and lack of definition in the terms of contract and service are among the reasons assigned for this. It is noted that among those on the panel an improved panel service is generally considered likely to prove preferable to a salaried State service.

One of the questions propounded by the Insurance Commissioners is as follows:—

What extensions of the present provision in respect of medical benefit do you consider are required to make the service an adequate one?

The reply given is that the service will only be adequate when it provides for—

(*a*) A consulting or special opinion in necessary cases by a panel of consultants, who would see the insured persons in their own houses or at the consultant's rooms as occasion required. (*b*) Institutional in-patient treatment to be carried out by private practitioners in consultation with physician or surgeon, with operations by surgeons. (*c*) Complete service of necessary laboratory work for diagnosis, vaccines and serums, and X ray. (*d*) Nursing in their own homes by an amplified system of district nurses, which would allow

the continuous attendance of a nurse for short periods in suitable cases. (*e*) Dentistry, to include the provision of dentures. (*f*) Convalescent homes. (*g*) Instruction by lectures.

Among other suggestions made may be mentioned one that 2500 should be the largest number of patients permitted for any member of the panel, it being recognised at the same time that much depends upon the circumstances of a practice and upon the individual capacity of the practitioner. It is asked with regard to certification that uniformity in requirements as to the issue of certificates should be made compulsory upon all societies, and that in cases of chronic incapacity certificates at intervals of four weeks should be deemed sufficient.

The recording and comparing of opinions such as the above cannot fail to prove useful when the opportunity comes to amend the conditions of National Insurance, thus benefiting the insured person and the profession responsible for his health.

Obituary.

EMIL VON BEHRING,

EXCELLENZ; DIRECTOR OF THE INSTITUTE OF HYGIENE IN MARBURG.

Emil Behring was born at Hansdorf, in West Prussia, on March 15th, 1854, the day following the birth of his great compatriot, Paul Ehrlich. After qualifying in medicine at Berlin, he entered the Army Medical Corps, becoming in 1888 lecturer at the Army Medical College in Berlin, and it was not until he was 35 years of age that he became assistant at Koch's Institute for Infectious Diseases, undertaking as his first research the disinfecting properties of iodoform, which led his thoughts into the channels of problems of immunity. The bactericidal property of cell-free blood serum then claimed his attention, and especially the behaviour of serum in animals which had been exposed to the bacterial toxins which Roux had just described in Paris. Working alone on diphtheria toxin and in association with Kitasato on tetanus toxin, "the possibility of successfully treating cases of acute infectious disease" became the theme of a research published in the *Deut. med. Wochens.* in December, 1890, entitled "Über das Zustandekommen der Diphtherie-Immunität und der Tetanus-Immunität bei Tieren." Clinical experience, accumulated largely by Heubner, confirmed these experimental results, and at an address on the Aims and Achievements of Serum-therapy at the Naturalists' Congress in Lübeck (1895) Behring was justified in saying: "I have no fear that the thought which forms the basis of serum-therapy will ever disappear out of medicine." He estimated the probable saving of 75 per cent. of the mortality from diphtheria in Germany, an annual credit of 45,000 human lives. For this work Behring shared with Roux the 25,000-fr. prize of the Paris Academy of Medicine and the 50,000-fr. prize of the Institute of France. In 1901 he received the Nobel prize for Medicine, and delivered an address in Stockholm on Serum-therapy, while his progress in the receipt of official recognition at home reached the highest level of Excellency in 1903.

In 1895, when he was 41 years of age, Behring was appointed director of the Institute of Hygiene at Marburg, and from this time on he achieved nothing further corresponding to the five years of successful scientific work at Berlin. Ill-health already obliged him to give up the teaching function attached to the directorship and he only gave an occasional public lecture. He became financially interested in the manufacture of antitoxic serum by the Farbwerke Höchst which built and equipped admirable laboratories for him, in which he conducted researches involving, it is stated, 7,000,000 ounces of tubercle cultures. The bovo-vaccine which he devised for the immunisation of calves against tuberculosis formed the mainstay of another great commercial undertaking named the Behringwerk, and Behring was able to become a large landed proprietor with a population of cattle on which to test immunisatory processes under his own eye. Bovo-vaccine was also largely employed in Russia, Sweden, and America, with results which excited keen interest at the time, but which do not appear to have survived the test of time and prolonged experience. Behring himself, who started with the firm belief that human and bovine tubercle are one, had a period in which this conviction waned, and returned again to the unitarian view. "Phthisis," runs a much-quoted sentence, "is but the end of a lullaby sung at the cradle of the prospective consumptive." And whatever may have been the practical outcome of his experimental work there is no doubt that Behring has profoundly influenced contemporary thought in the direction of looking on tuberculosis as a lifelong affection. After suffering severely from periods of depression, von Behring's life was terminated by a sharp attack of pneumonia on March 31st, 1917.

JOHN MITFORD ATKINSON, M.B.LOND., M.R.C.S.ENG., L.S.A., D.P.H.CAMB.

John Mitford Atkinson died on May 23rd at his residence in West Kensington at the age of 60. The only son of the Rev. Samuel Atkinson, he received his early education at Queen's College, Taunton, proceeding thence to the London Hospital. As a student he had a successful career. He qualified M.R.C.S. Eng. and L.S.A. in 1878, taking the M.B. Lond. in 1881, and when home on leave from China, the D.P.H. Camb. in 1894. For a time he was assistant resident medical officer to the Kensington Infirmary, where he had for his senior colleague the late Henry Percy Potter. Here he learnt the details of management of a large medical institution, which later he turned to good account. In 1887 he was appointed superintendent of the Government Civil Hospital, Hong-Kong. At that time the hospital had no European staff of nurses, and its reputation was not at all high. He set to work to bring the administration of this hospital up to the professional level of the large general hospitals in London. At the beginning he had to face many difficulties, partly official and partly inherent in the local conditions and the prejudices of the Far East. All these difficulties he surmounted, and he succeeded in gaining the confidence, support, and esteem not only of his official colleagues but of the European and even the Chinese population of the Colony. One of his first efforts was to secure the appointment of nursing sisters. The official eye looked askance at the introduction of women into the hospital. After a time official consent was given, but the first ladies appointed had for their qualification the fact that they were members of a religious order. Excellent in many ways, they lacked professional training, and after a brief period Atkinson's advice was accepted and they were replaced by nurses who had been trained in hospitals in England. The hospital administration was gradually improved, and it established a well-earned reputation for its efficiency and excellent work. To this hospital were taken the sailors of the Russian cruiser *Varyag* wounded at the naval battle with the Japanese near Chemulpo. In acknowledgment of the professional services rendered then the Czar presented Mitford Atkinson with a gold cigarette-case ornamented with the Russian coat-of-arms in diamonds.

Mitford Atkinson's medical career can be traced in the reports to the Colonial Government on the Civil Hospital, and on the sanitary condition and administration of the colony of Hong-Kong. Indeed, these reports give the history of the continued sanitary progress of the colony. He held office at the time when plague made its appearance in epidemic form in the colony; the official reports which he wrote on this subject are classics in the literature of the disease. In 1897 he was promoted to the office of Principal Civil Medical Officer, but his connexion with the Government Civil Hospital was not severed. As chief of the Government Medical Department he exercised administrative control over the various civil hospitals of Hong-Kong. In 1903 he was appointed a member of the Executive and Legislative Council of Hong-Kong. In 1912 he retired on pension.

Shortly after the present war broke out, Mitford Atkinson received a commission in the Royal Army Medical Corps, and was granted the rank of major. He was given the task of converting the workhouse and infirmary at Richmond in Surrey into a war hospital. In this work he attained the success he had achieved in Hong-Kong. Possessed himself of indomitable enthusiasm, he had the gift of imparting this quality to others. He won the cordial support and active coöperation not only of the hospital staff but of the patients themselves. In addition, he secured the loyal support of the inhabitants of Richmond, proud of their excellent war hospital. In spite of warnings of a possible breakdown in health, he refused to relax the strain imposed on him by administrative control. Signs of angina pectoris appeared and progressed, and he was invalided out of the

Service, receiving a gratuity for the work he had done. After some months of complete rest he was contemplating again taking up professional work, but he died suddenly on May 23rd.

Certain of Atkinson's medical writings were published from time to time in THE LANCET, a lecture on Plague in 1901, and in 1903 a Case of Septicæmic Plague in a European, and Methylene Blue in the Treatment of Malignant Malaria; in 1909 a Possible Natural Enemy of the Mosquito, and in 1910 a contribution on the treatment of plague and an account of the climate of Hong-Kong. He was a Fellow of the Royal Colonial Institute, the Royal Sanitary Institute, and the Society of Tropical Medicine. He was a keen sportsman and an able exponent in many directions; he ran a dead heat for the amateur 100 yards championship, and played cricket to the end of his life. For a quarter of a century he occupied a prominent position in the medical world of the Far East. At his home all members of our profession were welcome guests when duty or pleasure took them to the colony of Hong-Kong. He married Clara, the eldest daughter of James Eastmond, of Puddington, Devon, and leaves a widow and two sons.

URBAN VITAL STATISTICS.

(Week ended May 26th, 1917.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate civil population estimated at nearly 17,000,000 persons, the annual rate of mortality was 14·1, against rates steadily declining from 18·5 to 14·3 per 1000 in the six preceding weeks. In London, with a population exceeding 4,000,000 persons, the death-rate was 12·9, or 1·0 per 1000 less than in the previous week; among the remaining towns the rates ranged from 4·5 in Eastbourne, 5·5 in Edmonton, and 7·2 in Ealing, to 22·6 in West Bromwich, 23·1 in Rotherham, and 23·9 in Middlesbrough. The principal epidemic diseases caused 375 deaths, which corresponded to an annual rate of 1·2 per 1000, and included 238 from measles, 53 from whooping-cough, 42 from infantile diarrhœa, 29 from diphtheria, 12 from enteric fever, and 1 from scarlet fever. The deaths from measles were 13 below the average in the four previous weeks, and caused the highest annual death-rates of 3·9 in West Bromwich and in Sunderland, 4·3 in South Shields, 4·5 in Middlesbrough, and 5·8 in Rotherham. The 641 cases of scarlet fever and 1108 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital were respectively 32 and 52 below the numbers remaining at the end of the previous week. Of the 4579 deaths from all causes in the 96 towns, 146 resulted from violence. The causes of 22 deaths were uncertified, of which 8 were registered in Birmingham, 4 in Liverpool, and 2 in St. Helens.

Scotch Towns.—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,500,000 persons, the annual death-rate was equal to 16·1, against 15·9 and 17·0 per 1000 in the two preceding weeks. The 358 deaths from all causes in Glasgow corresponded to an annual rate of 16·7 per 1000, and included 35 from measles, 33 from whooping-cough, 5 from infantile diarrhœa, and 1 each from scarlet fever and diphtheria. The 102 deaths in Edinburgh were equal to an annual rate of 16·0 per 1000, and included 10 from measles, 8 from whooping-cough, and 3 from diphtheria.

Irish Towns.—The 151 deaths in Dublin were equal to a rate of 19·7, or 1·3 per 1000 above that recorded in the previous week, and included 5 from infantile diarrhœa, 3 each from measles and whooping-cough, and 1 each from enteric fever and scarlet fever. The 109 deaths in Belfast corresponded to an annual rate of 14·5 per 1000, and included a fatal case of enteric fever and 1 of infantile diarrhœa.

(Week ended June 2nd, 1917.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate civil population estimated at nearly 17,000,000 persons, the annual rate of mortality was 12·7, against rates steadily falling from 18·5 to 14·1 per 1000 in the seven preceding weeks. In London the death-rate was 11·7, or 1·2 per 1000 less than that recorded in the previous week; among the remaining towns the rates ranged from 3·1 in Aberdare, 4·8 in Ealing, and 6·3 in Merthyr Tydfil, to 20·5 in South Shields, 23·0 in Sunderland, and 31·1 in Middlesbrough. The principal epidemic diseases caused 366 deaths, which corresponded to an annual rate of 1·1 per 1000, and included 245 from measles, 43 from infantile diarrhœa, 41 from whooping-cough, 26 from diphtheria, 7 from scarlet fever, and 4 from enteric fever. The deaths from measles were 7 in excess of the number in the previous week, and caused the highest annual death-rates of 4·9 in Rotherham, 5·0 in Sunderland, 5·2 in South Shields, and 8·6 in Middlesbrough. The 626 cases of scarlet fever and 1061 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital were respectively 15 and 47 below the numbers remaining at the end of the previous week. Of the 4126 deaths from all causes in the 96 towns, 125 resulted from violence. The causes of 40 deaths were uncertified, of which 6 were registered in Birmingham and 3 each in Stoke-on-Trent, Manchester, and Gateshead, but not one in London.

Scotch Towns.—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,500,000 persons, the annual death-rate was equal to 16·0, against 17·0 and 16·1 per 1000 in the two preceding weeks. The 382 deaths in Glasgow corresponded to an annual rate of 17·9 per 1000, and included 39 from measles, 38 from whooping-cough, 3 from infantile diarrhœa, and 1 each from scarlet fever and diphtheria. The 102 deaths in Edinburgh were equal to an annual rate of 16·0 per 1000, and included 18 from measles, 6 from whooping-cough, 2 from diphtheria, and 1 from scarlet fever.

Irish Towns.—The 145 deaths recorded in Dublin were equal to an annual rate of 18·9, or 0·8 per 1000 less than that recorded in the previous week, and included 4 from measles, 2 from infantile diarrhœa, and 1 from scarlet fever. The 115 deaths in Belfast corresponded to an annual rate of 15·3 per 1000, and included 2 from scarlet fever and 1 each from enteric fever and measles.

Correspondence.

"Audi alteram partem."

THE LUMLEIAN LECTURES AND MEDICAL RESEARCH.

To the Editor of THE LANCET.

SIR,—The symptomatology of heart disease has undoubtedly its importance in regard to both diagnosis and prognosis, but it is equally true that most, if not all, of the symptoms that may be found attendant upon various diseases of the heart are frequently to be met with in those whose hearts are sound, and, on the other hand, many persons with serious organic heart disease do not complain of any symptoms. One may meet, for instance, with persons with very pronounced aortic regurgitation and others with very definite mitral stenosis (of the pure funnel variety) leading active lives for many years without presenting symptoms. Most of the symptoms connected with the heart are, indeed, of the nature of functional disturbance rather than organic embarrassment, and in my Lumleian lectures (p. 9) I endeavoured to classify them under the headings of (1) malnutrition, defective metabolism, morbid blood stream, functional overstrain as affecting the cardio-vascular muscle; (2) toxic influences, reflex excitation or depression, direct excitation or depression as affecting the cardio-vascular innervation; but I am careful to point out (p. 22) "that functional disturbance is as frequently observed in association with diseased as with healthy hearts and that many of the troubles and some of the catastrophes of cardiac disease are attributable to functional derangements." The criterion in either case, both from the treatment and prognosis points of view, is to be derived only from an estimation of the condition of the heart by physical examination.

I do not for a moment suppose that in practice Sir James Mackenzie would fail to attach all due importance to auscultative and other instrumental diagnosis of heart disease as well as to the consideration of symptoms. He has, as we know, much strengthened our methods in these respects, and his work has met with well-merited appreciation; but the trend of his advocacy at the moment seems to be to invert in order of importance the symptomatic and physical methods of diagnosis, and thus to misguide those who may be less experienced.

When Sir James Mackenzie observes that we should watch each individual case of heart disease throughout his life he speaks but an obvious truth, the only question being as to the opportunity of doing so; and when he adds that the danger lies not in the damaged valve but in the heart not being able to overcome successfully the embarrassment to its work caused by the damaged valve, he states another truism although in inverted order, for the danger is there all the time. It can be foreseen and estimated by careful consideration of the physical signs; when the symptoms of heart failure present themselves compensatory function is already failing. Let me give what I venture to regard as a model report on a case of heart disease for diagnosis and prognosis (the note is not mine, but came before me a few days ago).

An applicant for life assurance is reported to have had two attacks of rheumatism, the last seven years previously; he has an aortic diastolic and a mitral systolic murmur. What are the chances of his longevity? In other words, what is the probable term at which the heart will no longer be able to overcome the embarrassment to its action? In this view the able physician in the case proceeds to point out that the murmurs in either case do not completely replace the valve sound, the heart's action is regular at 78, it shows only a moderate degree of hypertrophy; further, the pulse, although deliberate, has not the collapsing characters of marked aortic regurgitation, and the blood pressure is well maintained at 140. It will thus be observed that we have the valve lesions indicated, the duration of the lesions given, the degree of valve defect shown in the character of the sounds, the power of the heart in overcoming its difficulties shown in the steady, quiet pulse and moderate enlargement, the output of the whole mechanism shown in the normal blood pressure. Is not this a masterly exposition of the facts of the case upon which a sound estimate of the cardiac condition may

be formed and advice given calculated to postpone the symptoms of failure?

Sir James Mackenzie's generous admission that "the older physicians did their work according to their lights as we do ours according to our lights," makes one hopeful that he at least has not yet joined the "reaction-aries," which his reference to the work of Dr. Poynton led me to fear that he might have done.

In this letter I have in mind especially valvular defects and their results upon the heart, which appear to be in question in the present correspondence.

I am, Sir, yours faithfully,

Portland-place, W., June 5th, 1917. R. DOUGLAS POWELL.

To the Editor of THE LANCET.

SIR,—I take second place to no one in my admiration of the work that Sir James Mackenzie has done in connexion with the investigation of diseases of the heart, and were I equally in accord with his controversial methods, it would not be necessary for me to trouble you with this letter. Sir James Mackenzie is a merciless critic from his own point of view of other people's views on cardiac and circulatory disorders, more especially if these happen to belong to what may be styled the old-fashioned type of clinical physician. In the process of pulverising his chimerical opponents he has expended a great deal of energy in flogging tired horses, in tilting at tattered windmills, and in razing to the ground tottering pathological structures which have respectively been flogged, tilted at, and razed to the ground on many previous occasions by many different writers. Clinical heresies no doubt die hard, and it may perhaps be just as well to ensure that they are really dead by killing them more than once! It is, however, quite another matter when in THE LANCET of May 26th Sir James Mackenzie directly challenges Dr. A. Morison to produce evidence of a single instance where he has given with clearness and precision a description of how murmurs can be differentiated to show those that are innocent and negligible from those that imply danger. Furthermore, he asks where, in Dr. Morison's own writings or in the writings of others, the principles for assessing the value of murmurs are indicated. Now, I hold no brief for Dr. Morison, and so hardy a campaigner in the field of cardiac dialectics can safely be left to take care of himself. But I must confess to no small amount of astonishment that hitherto no one has come forward to meet and answer this challenge on behalf of the older school of cardiac clinicians. It is with some diffidence that I feel compelled to undertake the responsibility of making at least some sort of reply to so provocative an inquiry; conscious as I am of my inability to do full justice to the theme, and knowing full well that I shall be accused of attempting to bolster up a lost cause.

Under the influence of Sir James Mackenzie's writings I was under the impression that medical opinion had hardened in the direction of paying relatively less attention to physical signs, including murmurs, and of giving more weight to symptoms and other indications of the condition of the cardiac wall in the investigation and diagnosis of diseases of the heart. Do I understand him aright when I assume that the observations in his letter of May 26th are an attempt to restore the tarnished splendour of physical signs, including murmurs, to their ancient diagnostic glory? I am quite ready to admit that the older writers may have attached too much significance to cardiac murmurs, and in so doing they no doubt neglected other features of greater value in the elucidation of disorders of the heart. Indeed, Sir, in this connexion I should be prepared to quote from authors on diseases of the heart written during the last 50 years material on the significance of murmurs sufficient to fill a whole issue of your valuable paper! I will content myself by quoting two instances which will suffice to illustrate my contention. Is Sir James Mackenzie conversant with the writings of my late chief, Sir William Broadbent? I put it to him that Broadbent's observations on the significance of the presystolic and diastolic murmurs of mitral stenosis are as nearly abreast of modern cardiology as anything that has been written. Again, I would call attention to George Balfour's observations on the mitral systolic murmur associated with "curable mitral regurgitation," and ask if no attempt has been made by past masters of clinical medicine to define the significance of cardiac murmurs? Surely Sir James Mackenzie must admit that, with all their faults, the older generation of clinical physicians did not hesitate to grapple with the interpretation of cardiac murmurs and endeavour to explain their significance. They may not have solved the problem, but at least they attempted to do so.

The tendency in the past to consider the different manifestations of a so-called disease in separate compartments has led to much confusion and error. It is essential to the full comprehension of cardiac as well as of other disorders that disease should be looked upon as a *process* beginning with functional disturbance and terminating in gross structural change. The whole series of events correlated with the progressive degradation of function and structure must be recognised and appreciated in all their bearings before it can be said that we understand the nature of any disease.

I am, Sir, yours faithfully,

Upper Berkeley-street, W., June 4th, 1917. E. H. COLBECK.

SHELL WOUNDS IN CHILDREN.

To the Editor of THE LANCET.

SIR,—During the earlier days of the war many children were wounded by shells, bombs, &c., in the towns and villages at the back of the firing line. To deal with these cases a civilian hospital was established in Belgium, situated at first in a town, and later removed to an adjoining field for greater safety. It was composed of long wooden barrack sheds or huts, with a good operating theatre and X ray instalment, and was staffed with Belgian nurses. Cases were brought in by ambulances from the country round, adults as well as children, sometimes very early, and at other times after a good interval had elapsed since the injury. The conditions of treatment being the same for adults and for children, one was able to compare the results of these two classes of case in their response to the treatment received. Unfortunately, partly from lack of assistance, and partly from absence of the facilities for bacteriological work, many notes of value were not kept.

Although other forms of treatment were tried, ordinary principles of surgery were mainly used, and consisted of—(*a*) prompt localisation and removal of all foreign bodies; (*b*) thorough drainage of wounds before, if possible, acute sepsis had set in; (*c*) daily irrigation of wounds with eusol. A general anæsthetic—viz., chloroform induction and warm open-ether sequence—was used in each case. The following serve to show the type of case treated:—

CASE 1.—Boy, aged 11, admitted with shell wound through back of thigh, completely fracturing the shaft of femur about the middle. The metal lodged in front of the bone. He was admitted within a few minutes of the accident. The fragment was at once located and removed by an anterior incision which was sutured and healed by first intention. Good drainage was established by a rubber tube from behind, and the limb put on a Hodgen splint and daily irrigated with eusol. In three weeks the wound was healed, and there was sufficient union of bone to enable all splints to be removed. The temperature was normal after the first three days, and after his sixth week he left hospital on foot carrying his own bundle.

CASE 2.—Girl, aged 10, with badly comminuted compound fracture of thigh by a shell. She was not seen for 10 days, and the missile had been removed elsewhere. After a mild septic course of about two months union was complete, though with much shortening and no necrosed bone came away.

CASE 3.—Girl, aged 12. A large fragment of shell penetrated the skull in the mid-frontal region. She was brought in at once, bleeding considerably from the median sinus. The metal and loose pieces of bone were at once removed, and had penetrated at least one and a half inches in depth. All injured dura was exposed by clipping away more bone. Some brain matter and hair escaped. The wound was packed with gauze for 24 hours. A cerebral hernia followed about the size of a hen's egg. This was dressed for a week with alcoholic compresses. The hernia disappeared in about six weeks, with no after-symptoms of cerebral injury. The temperature was practically normal throughout.

CASE 4.—Boy, aged 3, with shell wound in buttock near anus penetrating to a depth of about 2 inches (in adults not a favourable position). He was seen after 48 hours and the metal was removed literally wrapped in a piece of his coat. The wound healed in about two weeks. The temperature was rather high, but fell to normal at once after operation.

CASE 5.—Boy, aged 10, was playing with a hand grenade which exploded. He was not seen for 24 hours. He lost part of his thumb and received a compound split in the left tibia and an injury of the right knee opening into the joint. The wounds were trimmed and partly sutured and prolapsed muscle cut away. The knee-joint was irrigated with saline, a piece of cloth coming away. The missile had escaped. The capsule was completely sutured and the external wound closed around a gauze drain down to the capsule. The last I saw of him he was running down the road just under a month from the time of injury and all wounds healed.

Children as a class cannot by any means be considered immune from microbic infection, yet compared with the adults who were treated on exactly the same lines children did not exhibit sepsis to anything like the same degree, and their wounds consequently healed quicker. These children were certainly no cleaner than their parents, and their clothes

were often very dirty. It is possible that the smoothness of a child's skin has a good deal to do with this freedom from severe sepsis, and pathological germs reside in the pores and folds of the skin (which are more marked in adults) rather than in the dust and clothes. Psychological effects of explosives on the minds of the younger children admitted were very slight or absent, and they did not show symptoms of fear during air-raids or bombardments to anything like the same degree as did the adults, perhaps partly from want of realisation. As one more illustrative case the following may be given :—

A woman was walking in the street of a well-known Belgian town and her small child with her. The mother was killed on the spot by a bursting shell, and the child seemed wonderfully unconcerned when I saw it a few minutes later. It was not injured.

Finally, it might be added that hæmorrhage entered into prognosis in children before shock, and one or two cases were lost from that alone.

I am, Sir, yours faithfully,

A. H. FARDON,
Medical Officer in Charge.

Headquarters, F.A.U., B.E.F., May, 1917.

THE ETIOLOGY OF GANGOSA AND ALLIED CONDITIONS.

To the Editor of THE LANCET.

SIR,—In the *Annals of Tropical Medicine and Parasitology*, issued by the Liverpool School of Tropical Medicine, Vol. IX., No. 2, dated June, 1915, a description is given by Dr. Anton Breinl, of the Australasian Institute of Tropical Medicine, of gangosa, or rhinopharyngitis mutilans, and of certain forms of osteitis, periostitis, ulcus tropicum, ulcus interdigitale, and of certain forms of leucoderma. These cases are beautifully illustrated by the most excellent photographs. Dr. Breinl considers gangosa to be a separate disease due to an organism named by him *Cryptococcus mutilans*.

We would like to point out that all the above conditions occur frequently in Fiji, especially amongst the Fijians and half-castes, but also amongst Indians and Europeans who have long resided in Fiji. These diseases always are preceded by primary or secondary yaws, and they yield in their active stages to the same remedies as other forms of tertiary yaws, with which they are frequently associated. Medical men in Fiji, having a very large experience of yaws, invariably regard these manifestations as tertiary stages of frambœsia.

We are, Sir, yours faithfully,

PHILIP HARPER,
District Medical Officer, Fiji.
G. W. A. LYNCH, M.B.,
Chief Medical Officer.

March 5th, 1917.

TRENCH SHIN.

To the Editor of THE LANCET.

SIR,—Lieutenant-Colonel Graham Chambers's contribution in THE LANCET of May 19th to the study of that condition known as "trench shin" is of great interest. Whatever the etiology may be, it appears to be generally agreed that fibrositis is the cause of the pain. I have not had an opportunity of seeing these cases in their early stages, but have been called upon to treat many of them from the third week onwards. In the early cases I should be strongly inclined to use salicylate ionisation, but in those I have met I have found the most beneficial results from the sinusoidal current applied rhythmically (Lewis Jones interrupter) with the legs in Schnée baths. Patients tell me they experience great relief and can rest and sleep much better after the treatment, which is given for 20 minutes at a time on alternate days. No doubt the rhythmical contractions of the muscles favour the circulation and elimination of waste products, and I should expect similarly good results from the condenser arrangement devised by the late Dr. Lewis Jones and described by myself in the *Practitioner*, December, 1916. In this, by means of a motor interrupter, a condenser is alternately charged from the main and discharged through the primary of a coil, the patient being connected to the secondary. The current is applied rhythmically and has the advantage of giving powerful motor contractions with a very small sensory effect.

I am, Sir, yours faithfully,

L. W. BATHURST.

Harley-street, W., June 4th, 1917.

The War.

THE CASUALTY LIST.

THE following names of medical officers appear among the casualties announced since our last issue :—

Wounded.

Capt. F. M. Hughes, R.A.M.C., attached London Regiment.
Capt. G. Thomson, R.A.M.C., attached London Regiment.
Lieut. L. C. G. Bacon, R.A.M.C.
Lieut. T. Burrell, R.A.M.C.
Capt. F. R. Thornton, M.C., R.A.M.C.
Maj. N. J. Bullen, Australian A.M.C.
Capt. E. R. Mackay, Australian A.M.C.

Previously reported Missing, feared Killed, now reported not Missing.

Surg.-Prob. A. G. Lennox-Browne, R.N.V.R.

DEATHS AMONG THE SONS OF MEDICAL MEN.

The following sons of medical men must be added to our lists of those who are reported to have fallen during the war :—

Lieut. A. Mantle, London Regiment, younger son of Dr. A. Mantle, of Harrogate.
Capt. H. E. R. Hamilton, Canadian Railway Troops, elder son of Dr. H. T. Hamilton, of Barnes, London.
Lieut. E. H. Hopkinson, M.C., Cambridge Regiment, second son of Dr. A. Hopkinson, of Withington, Manchester.
Lance-Corp. H. M. Dockrell, Duke of Cornwall's L.I., youngest son of Dr. M. Dockrell, of Cavendish-square, London.
Second Lieut. W. G. M. Britton, Royal Flying Corps, fourth son of the late Dr. J. Britton, J.P., of Strabane, co. Tyrone.
Second Lieut. H. H. Ezard, Royal Flying Corps, elder son of Dr. E. H. Ezard, of Cambridge.

[We are glad to learn from Dr. G. T. Eccles, of Hove, that his son, Second Lieut. H. E. R. Eccles, of the Royal Flying Corps, is not dead, as reported, but is severely wounded, and is now in the Royal Flying Corps Hospital at Eaton-square, London.]

THE HONOURS LIST.

The following awards to and promotions of medical officers, for services in the field or for services in connexion with the war, are announced, on the occasion of the King's Birthday :—

K.C.B.

Col. J. Magill, C.B. (ret. pay); Lt.-Col. P. J. Freyer, C.B., I.M.S., ret.

C.B.

Surg.-Gen. G. Welch, R.N.; Fleet-Surg. J. Menary, R.N.; Temp. Surg.-Gen. Sir W. Macewen, R.N.; Temp. Surg.-Gen. G. R. Turner, R.N.; Col. R. Kirkpatrick, C.M.G., A.M.S.; Col. C. H. Burtchaell, C.M.G., A.M.S.; Col. J. J. Gerrard, A.M.S.; Temp. Col. W. H. Willcox, C.M.G.; Lt.-Col. (temp. Col.) G. W. Brazier-Creagh, C.M.G. (ret. pay), late R.A.M.C.; Lt.-Col. (temp. Col.) H. S. Thurston, C.M.G., R.A.M.C.; Lt.-Col. and Bt.-Col. Sir B. G. Seton, Bart., I.M.S.; Col. D. Wardrop, C.V.O. (ret. pay), A.M.S.; Col. C. R. Tyrrell (ret. pay), A.M.S.; Temp. Col. J. Galloway, A.M.S.; Surg.-Lt.-Col. (Hon. Surg.-Col.) R. J. Reece, H.A.C.; Surg.-Lt.-Col. Sir W. R. Crooke-Lawless, C.I.E. (ret. pay), R. of O. (empld. R.A.M.C.); Maj. and Bt.-Lt.-Col. (temp. Brig.-Gen.) A. C. Geddes, Unattd. List.

K.C.M.G.

Surg.-Gen. Sir A. T. Sloggett, K.C.B., C.M.G., K.H.S.; Surg.-Gen. F. H. Treherne, C.M.G.; Surg.-Gen. T. P. Woodhouse, C.B.; Col. R. N. Campbell, C.B., C.I.E. (ret.), I.M.S.

C.M.G.

Fleet-Surg. G. T. Bishop, R.N.; Col. C. C. Manifold, C.B., I.M.S.; Col. D. M. O'Callaghan, A.M.S.; Col. A. W. Bewley, A.M.S.; Lt.-Col. (temp. Col.) F. J. Greig (ret. pay), R. of O., late R.A.M.C.; Lt.-Col. G. Scott (ret. pay), late R.A.M.C.; Lt.-Col. A. Hosie (ret. pay), late R.A.M.C.; Lt.-Col. (temp. Col.) J. C. Connor, R.A.M.C.; Temp. Lt.-Col. A. D. Milne, East Afr. Med. Serv.; Maj. (temp. Lt.-Col.) R. J. C. Thompson, D.S.O., R.A.M.C.; Col. R. E. Roth, D.S.O., Austr. A.M.C.; Lt.-Col. T. H. Sweeny (ret.), I.M.S.; Lt.-Col. F. F. Perry, C.I.E. (ret.), I.M.S.; Lt.-Col. J. Chaytor-White (ret.), I.M.S.; Lt.-Col. S. B. Smith, I.M.S.; Lt.-Col. J. N. MacLeod, C.I.E. (ret.), I.M.S.; Lt.-Col. D. Harvey, R.A.M.C.; Temp. Hon. Lt.-Col. M. H. Gordon, R.A.M.C.; Maj. P. S. O'Reilly, R.A.M.C.; Maj. G. A. D. Harvey, R.A.M.C.; Temp. Maj. A. D. Reid, R.A.M.C.; Col. R. J. Millard, Austr. A.M.C.; Lt.-Col. W. T. Hayward, Austr. A.M.C.; Lt.-Col. T. E. V. Hurley, Austr. A.M.C.; Col. C. A. Hodgetts, Canad. A.M.C.

C.I.E.

Capt. H. H. Thorburn, I.M.S.

Surgeon-General.

Col. (temp. Surg.-Gen.) W. W. Pike, C.M.G., D.S.O.

Brevet-Colonels.

Lt.-Col. S. L. Cummins, C.M.G., R.A.M.C.; Lt.-Col. (temp. Col.) G. T. K. Maurice, C.M.G., R.A.M.C.

Brevet-Lt.-Colonel.

Maj. P. H. Henderson, D.S.O., R.A.M.C.

Brevet-Majors.

Capt. D. M. Corbett, R.A.M.C.; Capt. (actg. Lt.-Col.) B. Johnson, R.A.M.C.; Capt. H. F. Panton, M.C., R.A.M.C.

D.S.O.

I.M.S.—Lt.-Col. H. J. K. Bamfield; Maj. E. T. Harris; Lt. N. S. Jatar; Capt. A. N. Thomas; Maj. C. H. Watson.

R.A.M.C.—Maj. (temp. Lt.-Col.) D. Ahern; Lt.-Col. (temp. Col.) J. D. Alexander; Temp. Capt. P. H. Bahr; Lt.-Col. (temp. Col.) A. W. N. Bowen; Maj. R. H. Bridges; Capt. F. Casement; Capt. (actg. Lt.-Col.) H. K. Dawson; Maj. (temp. Lt.-Col.) B. H. V. Dunbar; Temp. Capt. J. J. Dwyer; Capt. (actg. Lt.-Col.) P. G. M. Elvery, M.C.; Lt.-Col. H. B. Fawcus, C.M.G.; Capt. (actg. Lt.-Col.) A. D. Fraser, M.C.; Maj. G. B. Gask; Lt.-Col. (actg. Col.) J. G. Gill; Lt.-Col. G. H. Goddard; Capt. J. Golding; Temp. Maj. (temp. Lt.-Col.) E. L. Gowlland (late Maj., R.G.A., T.F.); Maj. (temp. Lt.-Col.) G. H. L. Hammerton; Lt.-Col. (actg. Col.) H. Herrick; Maj. (temp. Lt.-Col.) H. C. Hildreth; Lt.-Col. C. H. Howkins; Maj. (temp. Lt.-Col.) W. D. C. Kelly; Capt. H. Lightstone, M.C.; Capt. (actg. Lt.-Col.) A. S. Littlejohns; Temp. Lt.-Col. D. D. Logan; Lt.-Col. (temp. Col.) P. MacKessack; Capt. (actg. Lt.-Col.) G. Mackie; Capt. (actg. Lt.-Col.) R. Magill; Temp. Capt. J. R. Marrack, M.C.; Lt.-Col. E. W. P. V. Marriott; Maj. (temp. Lt.-Col.) J. Matthews; Capt. (actg. Lt.-Col.) C. R. M. Morris; Capt. (actg. Lt.-Col.) K. D. Murchison; Capt. (actg. Lt.-Col.) A. D. O'Carroll; Lt.-Col. (temp. Col.) S. de C. O'Grady; Maj. J. S. Pascoe; Maj. (temp. Lt.-Col.) J. E. Powell; Maj. (temp. Lt.-Col.) T. P. Puddicombe; Lt.-Col. (temp. Col.) M. M. Rattray; Maj. J. D. Richmond; Maj. (temp. Lt.-Col.) H. Rogers; Maj. (temp. Lt.-Col.) D. Rorie; Temp. Capt. (actg. Lt.-Col.) L. D. Shaw; Maj. G. F. Sheehan; Maj. S. B. Smith; Capt. (actg. Lt.-Col.) G. H. Stevenson; Maj. (temp. Lt.-Col.) H. Stewart, M.C.; Capt. (actg. Lt.-Col.) M. R. Taylor; Capt. (temp. Maj.) R. S. Taylor; Maj. J. A. Turnbull; Temp. Capt. R. B. Wallace; Lt.-Col. A. H. Waring; Capt. (actg. Lt.-Col.) A. G. Wells; Maj. (temp. Lt.-Col.) R. M. West; Maj. W. J. Weston; Lt.-Col. E. A. Wraith; Maj. (temp. Lt.-Col.) T. J. Wright.

Australian A.M.C.—Lt.-Col. H. N. Butler; Maj. G. C. Byrne; Maj. G. E. Cole; Lt. Col. (temp. Col.) C. T. C. De Crespigny; Maj. W. A. Fraser; Lt.-Col. (temp. Col.) W. W. Hearne; Lt.-Col. (temp. Col.) R. B. Huxtable; Maj. C. L. S. Macintosh; Capt. A. H. Powell; Lt.-Col. A. H. Tebbutt; Maj. R. W. W. Walsh; Maj. H. L. St. V. Welch.

Canadian A.M.C.—Maj. R. M. Gorssline; Lt.-Col. W. B. Hendry; Maj. J. S. Jenkins; Lt.-Col. C. F. McGaffen; Lt.-Col. J. D. McQueen; Lt.-Col. C. P. Templeton; Lt.-Col. E. J. Williams.

New Zealand M.C.—Maj. T. D. M. Stout.

South African M.C.—Lt.-Col. R. L. Girdwood; Maj. (acting Lt.-Col.) R. N. Pringle; Lt.-Col. H. W. Vaughan-Williams.

Military Cross.

I.M.S.—Capt. A. N. Dickson.

R.A.M.C.—Temp. Capt. G. O. F. Alley; Capt. L. B. Baird; Capt. J. H. Bayley; Temp. Capt. J. H. Box; Capt. R. A. Broderick; Temp. Capt. J. V. Brown; Temp. Capt. L. G. Brown; Capt. A. E. Bullock; Temp. Capt. E. R. C. Cooke; Capt. J. M. A. Costello; Capt. G. Dalziel; Lt. R. Ellis; Capt. W. T. Gardiner; Temp. Capt. N. J. H. Gavin; Capt. W. George; Temp. Capt. D. Hardie; Capt. P. Hartley; Capt. A. S. Heale; Temp. Capt. J. T. Hurst; Capt. L. H. W. Iredale; Temp. Capt. A. Jones; Temp. Capt. D. Kelly; Capt. D. R. King; Temp. Capt. G. N. Lorimer; Temp. Capt. J. T. MacKenzie; Capt. J. C. Metcalfe; Temp. Capt. H. J. Milligan; Capt. J. R. Mitchell; Temp. Capt. H. Moore; Capt. R. E. U. Newman; Capt. M. W. Patterson; Temp. Capt. A. S. Plant; Temp. Capt. R. A. W. Proctor; Capt. J. P. Quinn; Temp. Capt. W. K. A. Richards; Capt. D. J. Scott; Capt. C. F. Searle; Temp. Capt. A. D. Sharp; Temp. Capt. H. S. Sugars; Capt. O. Teichmann; Temp. Capt. W. B. Wamsley; Capt. L. T. Whelan; Capt. J. St. G. Wilson.

Australian A.M.C.—Capt. H. W. F. Mitchell; Capt. G. S. Robinson; Capt. C. T. Turner; Capt. F. L. Wall.

Canadian A.M.C.—Capt. A. C. C. Johnston; Lt. (temp. Capt.) C. G. Sutherland; Capt. W. G. Turner; Capt. R. H. M. Hardisty.

New Zealand M.C.—Capt. A. V. Short.

South African M.C.—Capt. R. P. McNeill.

Egyptian Army M.C.—Yuzbashi Wadid Effendi Tanuis Ghusn.

Rhodesian Medical Service.—Surg.-Capt. E. G. Storrs.

MENTIONED IN DESPATCHES.

The names of the following medical officers mentioned in Sir Douglas Haig's despatch are additional to those published in THE LANCET of June 2nd, p. 856:—

Australian Army Medical Corps.—Col. G. W. Barber, D.S.O.; Lt.-Col. (temp. Brig.-Gen.) W. W. Hearne; Lt.-Col. (temp. Col.) R. B. Huxtable; Maj. L. W. Jeffries, D.S.O.; Maj. J. J. Nicholas; Col. A. Sutton, C.M.G.; Maj. A. S. D. Barton; Lt.-Col. H. N. Butler; Maj. G. C. Byrne; Lt.-Col. J. Corbin; Lt.-Col. C. T. de Crespigny; Capt. M. J. Holmes; Capt. (temp. Maj.) A. O. Howse; Maj. J. P. Kenny; Capt. N. E. B. Kirkwood; Maj. E. F. Lind; Maj. G. W. Macartney; Capt. J. McCusker; Maj. C. L. S. Macintosh; Capt. I. Morgan; Capt. A. H. Powell; Capt. S. A. Railton; Col. R. E. Roth, D.S.O., V.D.; Lt.-Col. H. S. Stacy; Capt. H. O. Teague (killed); Lt.-Col A. H. Tebbutt; Maj. C. W. Thompson, M.C.; Maj. R. W. W. Walsh; Maj. H. L. St. V. Welch; Capt. G. C. Willcocks; Lt.-Col. M. I. Williams (died of wounds); Maj. A. M. Wilson.

Canadian Army Medical Corps.—Maj. R. M. Gorssline; Maj. J. S. Jenkins; Lt.-Col. C. P. Templeton; Maj. A. T. Bazin; Maj. P. G. Bell; Capt. T. H. Bell; Capt. H. Buck; Lt.-Col. K. Cameron; Capt. J. C. Clarke; Maj. C. H. Dickson; Lt.-Col. J. M. Elder; Capt. A. W. M. Ellis; Col. J. T. Fotheringham, C.M.G.; Maj. A. L. C. Gilday; Capt. D. B. Kennedy; Capt. C. Kerr; Lt. (temp. Capt.) A. F. Laird; Capt. W. G. Lyall; Capt. A. McCausland; Capt. R. R. McClenahan; Lt.-Col. C. F. McGuffin; Lt.-Col. J. D. McQueen; Maj. G. S. Mothersill; Capt. H. R. Mustard; Lt.-Col. G. R. Philp; Maj. G. H. Wilson; Lt.-Col. C. F. Wylde.

New Zealand Medical Corps.—Lt.-Col. (temp. Col.) D. J. McGavin; Lt.-Col. J. Hardie-Neil; Maj. T. D. M. Stout; Capt. W. G. Borrie.

South African Medical Corps.—Maj. (actg. Lt.-Col.) R. N. Pringle; Temp. Maj. C. M. Murray.

Indian Medical Service.—Col. C. C. Manifold, C.B.; Lt.-Col. H. J. K. Bamfield.

Supplementary.—Capt. (temp. Lt.-Col.) D. B. Chiles-Evans, D.S.O., R.A.M.C. (killed); Capt. J. R. N. Warburton, R.A.M.C.

The following names of medical officers are mentioned in a despatch received from the Acting Sirdar and Governor-General of the Soudan, dated April 17th, 1917:—

Capt. S. McK. Saunders, R.A.M.C. (senior medical officer); Capt. B. H. H. Spence, R.A.M.C.

FOREIGN DECORATIONS.

Russian.

Order of St. Stanislas, 2nd Class (with Swords).—Fleet-Surgeons R. Hill, C.V.O. (now Deputy Surg.-Gen.), J. A. Moon, D.S.O., J. C. Ferguson, C. M. Beadnell, T. Austen, A. Maclean, D.S.O., H. W. Finlayson, D.S.O., E. C. Cridland, E. A. Penfold, D.S.O., L. Kilroy, H. K. Jones, and J. Stoddart.

Order of St. Stanislas, 3rd Class (with Swords).—Surgeon-Probationers A. G. Bee, G. Bluston, W. A. Turner, and W. E. Heath, R.N.V.R.

Order of St. Anne, 1st Class (with Swords).—Surg.-Gen. M. W. O'Keefe, C.B.

Order of St. Anne, 3rd Class (with Swords).—Staff-Surgeons F. H. Gowans, T. E. Blunt, and J. McA. Holmes, D.S.O.

French.

Légion d'Honneur, Croix de Chevalier.—Lt.-Col. A. E. Le Bel, Canadian, A.M.C.

Croix de Guerre.—Lt.-Col. H. B. Fawcus, C.M.G., R.A.M.C.; Temp. Capt. R. W. P. Jackson, R.A.M.C.; Capt. S. J. Linzell, R.A.M.C.; Col. S. Macdonald, C.M.G., A.M.S.; Temp. Capt. A. G. Maitland Jones, R.A.M.C.; Temp. Capt. V. M. Rich, R.A.M.C.; Temp. Capt. A. G. H. Smart, R.A.M.C.

THE WAR AND MEDICINE IN THE UNITED STATES.

Medical education in the United States during the war will proceed as far as possible on pre-war lines. As the result of a conference of the deans of the medical schools of the United States, held in Washington, it has been decided that it would be inexpedient to alter courses of instruction in order to expedite graduation. It is considered that the existing standards of medical education are better calculated to ensure a regular and adequate supply of competent physicians, however long the war may last, than any modification of prevailing methods. It has been agreed, however, to reorganise medical teaching so far as may be practicable in order to release as many men from the faculties of the medical schools as can be spared for military duty.

Under the title of the Red Cross Supply Service a new organisation has been formed to distribute among American soldiers and military hospitals gifts and supplies from patriotic individuals and relief societies throughout the country. The headquarters will be in Washington, with branches to supervise the collection and preparation of supplies at other large cities. It is hoped that much waste will be eliminated through coöperation with relief societies and systematic methods of purchase and distribution.

In the States there have been conferences of State and Territorial health officers to discuss the war work of the health authorities. In connexion with the sanitation of military and naval camp sites and the hygienic control of camps, it is suggested that the police power of the various jurisdictions might be brought to bear directly on the environments of camps, and so establish a subsidiary control in addition to that of the military authorities, while State laboratories might be made available for the diagnosis and sanitary oversight of infectious diseases among troops. Special precautions will be taken to prevent the introduction of infectious diseases owing to contact between the civilian and military populations.

The pharmaceutical manufacturers are going energetically into the business of supplying the medicines required for the war. Mr. Frank G. Ryan, president of Messrs. Parke, Davis, and Co., has enlisted in the Army and has been detailed on the Council of Defence, a body organised for the purpose of mobilising the industries of the country. This body has comprehensive powers and has already gone to work in a systematic manner. Mr. Ryan is secretary of the committee having the pharmaceutical and chemical section of the work specially in charge. The organisation covers every manufacturer of importance in the country, and each firm has promised to do its full duty. It is estimated that the supplies for hospital service alone will require 40,000 freight cars for transit, and the usual proportion of this material will consist of drugs and chemicals. This will interfere with the regular trade to a considerable extent, manufacturers having unanimously decided that the needs of the army must come first.

HEALTH OF THE MESOPOTAMIAN ARMY.—The War Office has issued a statement to the effect that the incidence of sickness among the men occupied in the Mesopotamian campaign is 60 per cent. less for the first fortnight of May, 1917, than for the corresponding period last year.

OBITUARY OF THE WAR.

ARTHUR TILBURY, M.R.C.S. ENG.,

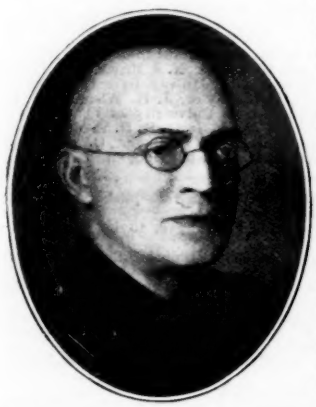
CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain A. Tilbury, who is reported missing, believed drowned on May 4th, when the *Transylvania* was sunk, was youngest son of John Tilbury, of Oakley, Hants, and brother of Mr. R. Tilbury, M.R.C.S., of 235, Queen's-road, S.E., with whom he was in partnership. Educated at Guy's Hospital, he obtained the qualification of the Conjoint Board (Lond.) in January, 1913, and joined his brother, while he continued to do clinical appointments at Guy's Hospital. When war broke out he was called up as a reservist in the London University O.T.C., and received a commission in the R.A.M.C. After serving at Canterbury for a year he was sent to Egypt in September, 1915. In March, 1917, he came to England on special duty, and it was on his return journey that he met his early death. His loss is keenly felt by his many friends at Guy's Hospital.

LEONARD GEORGE SCUDAMORE, M.R.C.S. ENG., L.R.C.P. LOND.,

LIEUTENANT, ROYAL ARMY MEDICAL CORPS.

Lieutenant L. G. Scudamore, who recently died in camp in England after a few hours' illness at the age of 47 years, was the seventh son of the late Frank Ives Scudamore, C.B. Born in Eltham he spent his early years in Turkey, where his father was stationed. He received his general education in France and Germany, returning to England to study medicine at St. Thomas's Hospital, whence he took the Conjoint diploma in 1891. For the past 15 years he had practised as a colliery surgeon in South Wales and Monmouthshire and was thus engaged when he took up war work. He served first as a civil surgeon at Edmonton Military Hospital, applying later for a commission, which was granted him in June, 1916. He served at various camps in this country, and to his keenness and unsparing devotion to duty his sudden and untimely death is attributed by those who knew him.



At the Edmonton Military Hospital Lieutenant Scudamore proved himself a capable surgeon and agreeable colleague. One who worked with him there writes: "Those of us who were fortunate enough to get behind the barrier of his reserve were able to appreciate the noble heart of the man, the astonishing wideness of his knowledge, his linguistic gifts and caustic humour, and lastly, his great devotion to duty. His self-denying work did not escape the notice of his patients, and it is no exaggeration to say that he was worshipped by the colliery villagers and soldiers among whom he worked."

Lieutenant Scudamore had only recently married Sister Gertrude Able, R.R.C., formerly of the Royal Orthopædic Hospital and now of the Prince of Wales's Hospital for Officers, with whom the greatest sympathy is felt.

JOHN JAMES WEAVER, M.R.C.S. ENG.,

CAPTAIN, ROYAL ARMY MEDICAL CORPS.

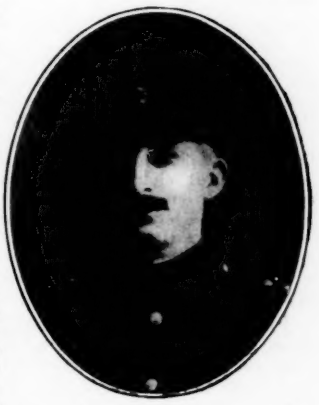
Captain J. J. Weaver, who was recently thrown from his horse at the Curragh Camp and killed, was 54 years of age and son of the late Dr. John Weaver, of Southport. Educated at University College, London, he qualified in 1886, and after a resident appointment at Oldham Infirmary went a cruise in a private yacht in the Mediterranean, when he rendered assistance to the crew and passengers of the wrecked P. and O. *Tasmania* in circumstances of great credit. Two years as house surgeon to the Southport Infirmary followed, and he then settled in practice at Southport. Becoming more and more interested in public work he was appointed to the medical officership of health in 1900. He became chairman of the health committee and an active agent in securing improvements in the sewerage system of the town and in the water- and milk-supplies. He already held commissioned rank as a surgeon with the Territorials, and in April, 1915, accepted a commission in the R.A.M.C., attached to the East Lancs Regiment, with which he served in various parts of England. Quite recently he was appointed chief sanitary officer at the Curragh, where he was killed instantaneously by a fall from his horse.

Outside his public work Captain Weaver was interested in various benevolent institutions in Southport. He was at one time honorary medical officer to the Day Nursery in Boundary-street and to the Girls' Orphanage and Training Home. He was generally known as a good friend to the poor in the town. Captain Weaver was married to Annie Pennington, daughter of the late T. O. Clinning, J.P., of Birkdale, by whom and a daughter he is survived.

JOHN BAILEY TACKABERRY, M.B., B.S. LOND.,

CAPTAIN, INDIAN MEDICAL SERVICE.

Captain J. B. Tackaberry, who died of cerebro-spinal fever in Mesopotamia on March 25th, was second son of the late T. Tackaberry, of Dungannon. Educated at Dungannon Royal School and Trinity College, Dublin, he received his medical training at the Middlesex Hospital, where he qualified M.B., B.S. Lond. in 1909. He held resident posts in the hospital and was assistant demonstrator of anatomy in the medical school before entering the Indian Medical Service, with a high place in the examination in 1911. After serving in India and at Hong-Kong, and receiving promotion in 1913, he was sent out to Mesopotamia attached to a Punjabi regiment. He leaves a widow, who is engaged in voluntary nursing at St. John's Hospital, Sevenoaks, and one child.



THE MIDDLESEX HOSPITAL AS A "MOBILISATION CENTRE."

The War Office have decided to make an immediate but strictly limited trial of the scheme for organising hospital units contained in the pamphlet by Lieutenant-Colonel Sir James K. Fowler, K.C.V.O., on the "Medical and Nursing Services of the Imperial Army," which we noticed last week.[1] Circumstances having necessitated an increase in the hospital accommodation for the armies in the various theatres of war, it has been determined that one of the additional units required may be raised from amongst the medical men educated at a single London hospital who have not yet been able to serve abroad for various reasons, or, having already done so, desire to renew their engagements for a further period. The Middlesex Hospital has been selected for the trial, and Sir James Fowler has undertaken to form a "mobilisation centre" as described in his pamphlet.

This is not to be regarded as in any sense affording a test of the value of the scheme as a whole, which is one obviously intended to come into operation at the outbreak of a war. More than 400 Middlesex men are known to be now, or to have been some time during the war, serving as officers of the Royal Army Medical Corps, and other hospitals have an equally good record. The officers of this new unit will all be Middlesex men, the matron, sisters, and nurses will have been trained at that hospital, and the V.A.D.'s will be selected from families connected with the hospital, but the orderlies will be men now serving with the Royal Army Medical Corps. The unit will be known as the Middlesex No. —— General Hospital. No undertaking will be given that the personnel of this unit be not detached to other units, as the exigencies of the service may render such a proceeding necessary. The unit will be raised for general service and will be sent to any of the various theatres of war at which it may be required. It follows that the officers, nurses, &c., must all be fit for general service, and engagements will be for the duration of the war. No applications from Middlesex men now serving abroad for transfer to this unit will be considered except in special circumstances.

Communications connected with the unit should, in the first instance, be addressed to Lieutenant-Colonel Sir James Fowler, or, in the case of nurses and V.A.D.'s, to the Matron, at the Middlesex Hospital, Mortimer-street, W.

NEW MILITARY HOSPITALS.—The first Plymouth V.A.D. hospital was formally opened by the Mayor in the presence of a large gathering. The hospital contains 200 beds arranged in 16 marquees. The County Territorial Association have placed their buildings at the disposal of the authorities, and these are used for dining- and recreation-rooms and offices. The sum of £3206 has been collected locally towards the cost of the scheme.—Tockington Manor, Gloucestershire, has been fitted up as a military hospital through the generosity of Captain Salmon. It is to be used by the authorities of the Beaufort War Hospital, and was formally opened last week and 20 patients admitted.—On May 16th Miss G. Buller formally opened the new building which is to be an extension of the Crediton (Devon) V.A.D. Hospital. It will provide accommodation for 42 beds, and increase the accommodation in the Crediton Hospital to a total of 72 beds. Mr. Leslie Powne is in medical charge of the institution.—Ashton Court, near Bristol, has been recently opened as a convalescent home for officers, and 70 patients are in residence.—Bathampton House, near Bath, which has been fitted up as a Red Cross hospital, has now been opened. It is delightfully situated and is the second Red Cross hospital in Bath.

PERSONS engaged in the manufacture, purchase, sale, or other dealings in artificial human eyes have been ordered, under the Defence of the Realm Regulations, to send in to the Director of Optical Munitions and Glassware Supply, 117, Piccadilly, W. 1, immediate returns containing particulars of the number, type, and material of all artificial human eyes in their possession or under their control.

[1] The pamphlet, price 3*d*, may be obtained from Messrs. Macmillan and Co., Limited, St. Martin's-street, London.

THE SERVICES.

ROYAL NAVAL MEDICAL SERVICE.

Surg.-Gen. Sir Arthur W. May, K.C.B., K.H.P., has been placed on the retired list from June 1st, 1917, at his own request.

ROYAL ARMY MEDICAL CORPS.

Lieut.-Col. H. E. M. Douglas, V.C., C.M.G., D.S.O., to be temporary Colonel whilst employed as Assistant Director of Medical Services of a Division.

Temp. Major D. P. Kappele (Can. A.M.C.) to be temporary Lieutenant-Colonel while holding appointment as O.C. Can. Cav. Field Ambulance.

Temp. Major W. Hind (Major and Bt. Lieut.-Col., T.F. Res.) to be temporary Lieutenant-Colonel.

Temp. Capt. Ryder P. Nash (Capt., R.A.M.C., T.F.) to be acting Lieutenant-Colonel whilst in command of a Field Ambulance.

Lieut.-Col. A. R. Aldridge, C.S.I., C.M.G., Res. of Off., to be acting Colonel whilst specially employed.

Temp. Major W. R. Dawson to be temporary honorary Lieutenant-Colonel.

Temp. Hon. Major W. I. de C. Wheeler to be temporary Major and honorary Lieutenant-Colonel.

Temporary Captains to be temporary Majors: H. H. Serpell, E. W. Witham, V. J. Blake, F. B. G. Stableford, G. P. Humphery, B. G. Elliott (Major E. Lan. R. (T.F.)), C. Saint-Pierre (Can. A.M. Corps), L. E. Pariseau (Can. A.M. Corps), J. A. H. Forgues (Can. A.M. Corps), J. L. Petitclerc (Can. A.M. Corps), J. Lafleur (Can. A.M. Corps).

W. S. Haughton to be temporary Major.

Capt. O. R. McEwen to be acting Major whilst in charge of a Base Depôt Medical Store.

The undermentioned are granted temporary rank for duty with South African Native Labour Corps: As Majors: T. N. Frood, F. H. Welsh. As Captain: C. A. Kitching, E. B. Israel, W. F. McGlashan, H. Tren, W. J. Calder, W. L. A. Leslie, C. D. Goodenough, G. B. Moffat, L. E. Hertslet, L. P. Booth, T. A. Beddy, M. Ricono, C. J. H. Aitken, J. McLaw, C. G. Todd.

The undermentioned are granted temporary rank whilst serving with Belfast War Hospital: As Lieutenant-Colonel: W. Graham. As Captain: S. J. Graham.

A. C. D. Firth, late temporary Captain, is granted the honorary rank of Captain.

Temporary Lieutenants to be temporary Captains: J. R. Payne, D. MacC. Brown, A. N. Drury, A. A. B. Scott, J. C. Anderson, E. I. Davies, F. W. Davidson, C. Stanley-Clarke, J. A. Vlasto, C. G. Kemp, F. C. Jobson, C. C. Austin, J. Gray, R. L. Ferguson, O. R. Allison, T. M. Bride, A. E. Finney, P. S. Green, W. A. Cardwell, W. W. Wood, F. Shannon, L. Gameson, S. H. Calnek, E. H. Montgomery, H. M. Drake, G. Arthur, D. I. Dakeyne, C. A. R. McCay, E. J. B. Moynihan, H. H. Crickitt, R. H. Balfour-Barrow, G. W. Doran, W. T. Evans, D. M. Smith, J. Manuel, H. Joslen, W. Spiteri, J. A. H. Vanderwert, A. P. MacMahon, W. M. Stewart, R. Lindsay, J. W. Macfarlane, F. R. Martin, J. N. Cruikshank, A. Davidson, J. B. Fisher, T. R. Fulton, G. Kirkhope, T. H. V. King, P. G. Foulkes, S. G. Harrison, V. C. James, J. A. Tobin, R. G. Gillies, A. A. Greenwood, W. B. Knobel, W. D. Newcombe, L. G. Jacob, A. N. Haworth, D. Kennedy, W. C. Gore, P. A. Dargan, D. W. Smith, E. H. Eastwood, N. B. Capon.

A. Stephens, late temporary Lieutenant, to be Honorary Lieutenant.

E. Kaye Le Fleming to be temporary Honorary Lieutenant whilst employed with the British Red Cross Hospital, Netley.

Temp. Hon. Lieut.-Col. C. H. Fagge (Major, R.A.M.C., T.F.), having resigned his appointment, relinquishes his temporary commission.

Officers resigning their commissions: Temp. Maj. S. W. Woollett, and is granted the honorary rank of Major. Temporary Captains: M. E. Robinson, A. T. Roberts, C. J. Butler. J. A. Gibb, C. S. Crichton, T. L. Wormald, A. H. Butcher, G. W. Stone, H. C. Thorp, J. R. McVail. Temporary Lieutenants: L. F. McDowell, W. T. Little, H. R. Hodgkinson, M. D. Baker, W. Anderson, F. H. Simpson, W. H. C. Romanis, G. A. Francis, C. D. Hatrick, R. H. Titcombe, T. F. Collins, H. Lewis, D. J. Roantree. A. E. A. Carver, A. Smirthwaite, R. E. J. St. J. Griffin.

SPECIAL RESERVE OF OFFICERS.

Capt. R. Magill to be acting Lieutenant-Colonel whilst in command of a Field Ambulance.

Lieut. on probation J. A. W. Cullen is confirmed in his rank.

To be Lieutenants: A. B. Black, W. Brown, N. S. Bruce, S. N. Dyke, R. G. Battersby, L. W. Hughes, and J. J. Mulvey, from the Glasgow University Contingent, O.T.C.; F. O. Taylor, J. H. Wiseman, R. L. Robinson, and O. St. L. Campion, from University of London Contingent, O.T.C.; W. W. Newton, J. J. A. Scott, H. G. V. Mence, and F. J. Harvey, from Birmingham University Contingent, O.T.C.; T. C. Murphy, J. Rowland, H. Chadwick, H. Gainsborough, and L. Gill.

TERRITORIAL FORCE.

Major (acting Lieut.-Colonel) W. D. Watson relinquishes his acting rank on ceasing to command a field ambulance.

Lieut.-Col. C. E. Douglas, from T.F. Reserve, to be Lieutenant-Colonel.

Major W. McCall to be Acting Lieutenant-Colonel while commanding a field ambulance.

Capt. R. P. Nash is seconded whilst holding a temporary commission in the R.A.M.C.

Capt. A. G. R. Foulerton to be temporary Major.

Capt. (temp. Major) A. C. H. McCullagh to be Acting Lieutenant-Colonel while commanding a field ambulance.

Capts. S. Acheson and J. W. Heslop, from T.F. Reserve, to be Captains.

Lieuts. C. A. E. I. Brownlee and J. McG. H. Reid to be Captains.

To be Lieutenants: L. H. Callendar, F. J. E. China, and R. C. Davie.

Capt. E. P. I. Coke relinquishes his commission on account of ill-health, and is granted the honorary rank of Captain.

Capt. R. J. Irving relinquishes his commission on account of ill-health.

TERRITORIAL FORCE RESERVE.

Col. A. V. Clarke to be Colonel.

INDIAN MEDICAL SERVICE.

The relinquishment of the temporary rank of Lieutenant by Narayan Mahadev Bodas and Tanguturi Janakiramiah has been approved by the King.

COLONIAL MEDICAL SERVICES.

West African Medical Staff.—The death is reported of Mr. L. Doudney, medical officer, Nigeria (Northern Provinces), and of Dr. T. Ryan, medical officer, Gambia, who was drowned at sea by enemy action. Mr. C. E. S. Watson, Senior Medical Officer, has been promoted Provincial Medical Officer, Nigeria (Northern Provinces). Dr. J. C. M. Bailey, Temporary Lieutenant, R.A.M.C., has been appointed Senior Medical Officer, Nigeria (Southern Provinces). Dr. A. H. Horn, Senior Medical Officer, has been transferred from the Gambia to Nigeria (Northern Provinces), and Mr. E. C. Adams, Senior Medical Officer, from the Gold Coast to the Gambia. Dr. R. W. Gray, Senior Medical Officer, Nigeria (Southern Provinces), has retired on pension, and Dr. G. G. P. Beckett, Temporary Lieutenant, R.A.M.C., medical officer, Gold Coast, has resigned his appointment. Dr. G. F. Darker has ceased to be temporarily re-employed as Medical Officer, Nigeria (Northern Provinces), and Dr. H. G. F. Spurrell has ceased to be temporarily employed.

The following officers, whose services have been placed at the disposal of the Army Council, have been given temporary commissions in the Royal Army Medical Corps: A. C. Parsons, C. L. Ievers (Gold Coast), E. A. Charters, and W. G. Cobb (Nigeria). The following have been temporarily lent to other administrations: A. E. Horn, T. H. Suffern (Nigeria), G. J. Kelgwin (Gold Coast) to the Provisional Civil Administration, German East Africa; H. F. Hamilton (Gold Coast), P. A. Clearkin, J. McK. Clark, J. M. O'Connell (Sierra Leone) to the East Africa Protectorate; J. Currie (Nigeria) to the Uganda Protectorate; and H. E. Arbuckle (Sierra Leone), and E. J. Quirk (Nigeria) to the Nyasaland Protectorate. T. M. R. Leonard, G. H. Gallagher, T. R. Sandeman, B. Gibson, and C. Mackey (Nigeria) are on military duty in East Africa.

DEATHS IN THE SERVICES.

Brigade-Surgeon Augustus Frederick Elliot, A.M.S. (retired), at his residence, Exmouth, on May 25th, in his eighty-fourth year. He joined the Army Medical Service in 1861, served in the Ashanti War of 1873 and 1874, and was present at the capture of Coomassie. He retired in 1884 with the honorary rank of brigade-surgeon.

Medical News.

UNIVERSITY OF LONDON.—At examinations held recently the following candidates were successful:—

THIRD (M.B., B.S.) EXAMINATION FOR MEDICAL DEGREES.

Charles Vincent Boland, St. Bartholomew's Hospital; Clement Clapton Chesterman, University of Bristol; Hetty Ethelberta Claremont, London School of Medicine for Women and St. George's Hospital; Raghunath Ganesh Dani, University College Hospital; Philip Oswald Ellison, St. Bartholomew's Hospital; Thomas Stenner Evans, University College, Cardiff, and St. Mary's Hospital; John William Heekes, Charing Cross Hospital; Jerusha Jacob Jhirad, London School of Medicine for Women; John Isaie Keen (honours, distinction in surgery), Charing Cross Hospital; Frank Alexander Knott, Guy's Hospital; Edward Eric Lightwood, Westminster Hospital; John Etwart George McGibbon, University of Liverpool; George Alex Sheridan Madgwick, London Hospital; Ferdinand Molina, St. Thomas's Hospital; Victor J. E. C. del S. Perez y Marzan, University College Hospital; Pinthu Sai, St. Thomas's Hospital; Basil Sampson, Guy's Hospital; Raghunath Dadoba Shirvalkar, University College Hospital; Philip Smith, Guy's Hospital; Daniel Jenkin Thomas and John Herbert Thomas (honours, distinction in surgery), University College Hospital; and Lotty Weihermann, London School of Medicine for Women.

B.S. EXAMINATION *(for Students who graduated in Medicine in or before May, 1904).*

Sidney Forsdike, University College Hospital.

The following candidates have passed in one of the two groups of subjects:—

Group I.—Hannah Katherine Alton, King's College Hospital and London School of Medicine for Women; Elizabeth Labrey Ashby, University of Birmingham; Margaret Stote Glen Bott, Dorothy Trevor Daintree, Alice Mary Ley Greaves, and Rosalie Jobson, London School of Medicine for Women; William Arthur Edward Karunaratne, University College Hospital; Sinnethamby Muttiah, London Hospital; Morris Schwartz, University College Hospital; and Ellen Sylk, London School of Medicine for Women.

Group II.—Thomas Anwyl Davies, St. Thomas's Hospital; Susan Alfreda Finch, London School of Medicine for Women; Harry Mainwaring Holt, University of Leeds; and Henry Cecil Jennings and Cyril Valentine Pink, St. Thomas's Hospital.

HILDEN CONVALESCENT HOSPITAL, BELFAST.—This institution, the first hospital established in Ulster under the joint auspices of the British Red Cross Society and the Order of St. John, was organised by the Joint Ulster Committee of these two societies, and was opened on May 23rd by Mrs. Harold Barbour, whose generous contribution to the funds made the inception of the hospital possible. Admirably situated in a well-wooded park in the southern outskirts of Belfast, the main hospital, a private mansion, has accommodation for 50 wounded soldiers, with an annexe containing 80 beds. Sir Robert Kennedy, K.C.M.G., D.L., chairman of the Ulster Joint Committee of the Red Cross and St. John, who presided, was supported by the Lord Mayor of Belfast, the High Sheriff of Belfast, and General Sir William Adair, K.C.B., D.L. Sir John Byers said there were two valid reasons for the foundation of such a beautiful hospital—first, it occupied a niche of its own amongst all the other hospitals in the city of Belfast that had to do with wounded soldiers, inasmuch as it was concerned mainly with convalescents, while its existence would help the Minister of Pensions in his scheme for the up-building of the wounded soldier.

A DEVONSHIRE CENTENARIAN.—Mrs. Mary Honeywill died recently at Marybank, Beeson, in her 101st year.

Lieut.-Colonel (Temp. Colonel) Oliver Long Robinson, C.M.G., R.A.M.C., has been appointed an honorary physician to the King, vice the late Surgeon-General Sir W. Taylor, K.C.B., M.D.

Lord Rhondda is announced to address a meeting at the Queen's Hall, London, on Wednesday next, at 5 P.M., on the progress made during the past six months in the campaign against venereal disease. Sir Alfred Keogh will speak to the military side of the question. The Lord Mayor of Liverpool and Mrs. Creighton will also speak, the latter representing the women's point of view. Application for tickets should be made to the secretary of the National Council for Combating Venereal Diseases, Avenue Chambers, Southampton-row, W.C.1.

PLYMOUTH ASYLUM.—The Plymouth borough council has adopted a scheme for the enlargement of the borough asylum. It provides accommodation for 440 additional patients, at an estimated cost of £100,000. The Board of Control has just informed the local authorities that it is prepared to consider the plans for this extension.

MEDICAL TREATMENT OF THE DISCHARGED AND DISABLED.—The Executive Committee of the National Medical Union, at a meeting held on May 29th, resolved that the following expression of opinion be sent to Mr. Barnes, the Pensions Minister: "That if it be, as reported, the intention of the Government to limit the choice of medical attendance for discharged disabled uninsured soldiers and sailors to medical men on the Insurance panels, it is a gross invasion of their right to freedom of choice, and an injustice to the large body of medical men not engaged in Insurance practice."

THE LATE MR. W. WHITWORTH.—William Whitworth, M.R.C.S., L.S.A., died at his residence, St. Agnes, Cornwall, on May 14th, in his sixty-fourth year. The deceased, who succeeded to his late father's practice, had practised in St. Agnes for 30 years, and was district medical officer and honorary medical officer to the convalescent home. He did much good work for the establishment of the local nursing association, and the Miners' and Mechanics' Institute owes its present building largely to his efforts. His portrait was presented to him by the local residents in 1903. He leaves a widow and three sons, two of whom are in the Army.

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

DUNSTAN, ROBERT, M.R.C.S., L.S.A., has been appointed Acting Medical Officer and Public Vaccinator for the Paignton and Marldon District of the Totnes (Devon) Union.

HEATH, CHARLES, J., F.R.C.S. Eng., Consulting Aurist to the Metropolitan Asylums Board Infirmary for Children.

LOCKET, THOMAS WOOD, M.A., M.B., B.C. Camb., Acting Medical Officer and Public Vaccinator for the Lacock District of the Chippenham (Wilts) Union.

MASON, P. J., M.B., Ch.B. Birm., Certifying Surgeon under the Factory and Workshop Acts for the Tipton District of the county of Stafford.

SALT, ARTHUR PHILIP, M.R.C.S., L.R.C.P., Medical Officer to Totnes Workhouse, and Medical Officer and Public Vaccinator, Totnes and Haberton Districts of the Totnes (Devon) Union.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

When the application of a Belgian medical man would be considered the advertisers are requested to communicate with the Editor.

BIRMINGHAM CITY EDUCATION COMMITTEE.—Temporary Assistant School Medical Officer. Salary £300 per annum.

BODMIN, CORNWALL COUNTY ASYLUM.—Female Junior Assistant Medical Officer. Salary £200 per annum, with board, &c.

BOOTLE BOROUGH HOSPITAL.—Junior House Surgeon. Salary £170 per annum, with board, &c.

BRISTOL ROYAL HOSPITAL FOR SICK CHILDREN AND WOMEN.—Female House Physician. Salary £150 per annum, with board, &c.

BRISTOL ROYAL INFIRMARY.—House Physician and House Surgeon. Salary at rate of £120 per annum, with board, &c.

CAPE TOWN, SOUTH AFRICAN COLLEGE.—Professors of Pharmacology, Pathology, and Bacteriology. Salary at rate of £800 per annum each.

CHARING CROSS HOSPITAL, Agar-street, W.C.—House Physician and House Surgeon. Salaries £100 per annum, with board, &c.

COVENTRY AND WARWICKSHIRE HOSPITAL.—House Surgeon (second Resident). Salary £300 per annum, with board, &c. Also House Physician. Salary £250 per annum, with board, &c.

DARLINGTON GENERAL HOSPITAL.—House Surgeon. Salary £200 per annum, with board, &c.

DEVONPORT, ROYAL ALBERT HOSPITAL.—House Surgeon, unmarried. Salary £150 per annum, with board, &c.

DUMFRIES AND GALLOWAY ROYAL INFIRMARY.—House Surgeon.

GRIMSBY AND DISTRICT HOSPITAL.—House Surgeon. Salary £5 5s. per week, with board, &c.

GUY'S HOSPITAL.—Assistant in Bacteriological Department. Salary at rate of £250 per annum.

HAWKHEAD ASYLUM, Cardonald, Glasgow.—Senior Assistant Medical Officer. Salary £350, with board, &c. Also Junior or Temporary Assistant.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Brompton.—Resident Medical Officer. Salary £200 per annum, with board, &c.

LIVERPOOL EYE AND EAR INFIRMARY, Myrtle-street.—Female House Surgeon. Salary £150 per annum, with board, &c.

MANCHESTER CHILDREN'S HOSPITAL, Pendlebury, near Manchester.—Two Female Resident Medical Officers, unmarried. Salary at rate of £100 per annum.

MANCHESTER, CORPORATION OF.—Temporary Assistant Tuberculosis Officer. Salary £450 per annum.

MANCHESTER, HULME DISPENSARY, Dale-street, Stretford-road.—House Surgeon. Salary £250 per annum, with apartments, &c.

MANCHESTER ROYAL EYE HOSPITAL.—House Surgeon. Salary £120 per annum, with board, &c.

MANCHESTER ROYAL INFIRMARY AND DISPENSARY.—Honorary Assistant Physician.

PLYMOUTH, SOUTH DEVON AND EAST CORNWALL HOSPITAL.—House Physician. Salary £200 per annum, with board, &c.

PRINCE OF WALES'S GENERAL HOSPITAL, Tottenham, N.—Honorary Assistant Surgeon to Ear, Nose, and Throat Department.

QUEEN'S HOSPITAL FOR CHILDREN, Hackney-road, Bethnal Green, E.—House Physician, Casualty House Surgeon, and House Surgeon for six months. Salary £100 per annum, with board, &c. Also Temporary Assistant Physician Wednesday afternoons to see Out-patients. Lunch provided and Travelling Expenses.

ROTHERHAM HOSPITAL.—Junior House Surgeon. Salary £150 per annum, with board, &c.

SHEFFIELD, JESSOP HOSPITAL FOR WOMEN, GYNÆCOLOGICAL AND MATERNITY DEPARTMENTS.—Junior Female House Surgeon, unmarried. Salary £200 per annum, with board, &c.

SHEFFIELD ROYAL INFIRMARY.—House Physician. Salary £120 per annum, with board, &c.

SHREWSBURY, ROYAL SALOP INFIRMARY.—House Physician. Salary at rate of £200 per annum, with board, &c.

STOCKPORT, COUNTY BOROUGH EDUCATION COMMITTEE.—School Medical Officer. Salary £300 per annum.

TAUNTON AND SOMERSET HOSPITAL.—Senior House Surgeon. Salary £250 per annum, with board, &c.

WESTMORLAND CONSUMPTION SANATORIUM AND HOME, Meathop, Grange-over-Sands.—Assistant Medical Officer. Salary £300 per annum, with board, &c.

THE Chief Inspector of Factories, Home Office, London, S.W., gives notice of a vacancy for a Certifying Surgeon under the Factory and Workshop Acts at East Wemyss, in the county of Fife.

Births, Marriages, and Deaths.

BIRTHS.

FISHER.—On May 31st, at Belgrave-crescent, Edinburgh, the wife of Edward F. Fisher, M.B., F.R.C.S., Temporary Surgeon, R.N., of a daughter.

HAYES.—On May 30th, at Fallowfield, Edgbaston, the wife of Captain L. C. Hayes, R.A.M.C., of a son.

TIRARD.—On June 5th, Mabel (*née* Dury), wife of Lieutenant N. S. Tirard, R.A.M.C., of a daughter.

MARRIAGES.

ALDERSON—PASTEUR.—On June 4th, at St. Andrew's, Wells-street, by the Rev. W. Harry Roberts, M.A., Captain Gerald Graham Alderson, F.R.C.S., R.A.M.C., son of Mr. and Mrs. John Alderson, of Newcastle-on-Tyne, to Marguerite Norah, elder daughter of Colonel W. Pasteur, A.M.S., and Mrs. Pasteur, Chandos-street, Cavendish-square.

WARBURTON—O'HAGAN.—On June 2nd, at St. John's Church, Pendlebury, by the Rev. T. Dale Jones, M.A., Gilbert Bertram Warburton, M.B., Ch.M., F.R.C.S. Eng., second son of the late Samuel Warburton, of Bolton, to Edith Eveline Maureen, younger daughter of Charles O'Hagan, of co. Meath, Ireland.

DEATHS.

BARTLET.—On May 27th, at Birkfield, Ipswich, J. H. Bartlet, M.D., aged 87.

HILL.—On June 2nd, at The Brow, Clevedon, Somerset, Walter J. Hill, M.R.C.S., L.R.C.P.

IRVINE.—On May 22nd, at Abergeldie, Torquay, J. Pearson Irvine, C.E., O.R., only and beloved son of the late J. Pearson Irvine, M.D., F.R.C.P. Lond., Mansfield-street, Cavendish-square, London, W., and Mrs. Irvine (late of Cromartie), Torquay.

VAUGHAN.—Killed in action on May 22nd, R. W. Vaughan, M.B., M.R.C.S., L.R.C.P. Lond.

WINKFIELD.—On June 3rd, at Beaumont-street, Oxford, Alfred Winkfield, M.A., F.R.C.S., aged 79 years.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

"BANTING."

IT is interesting at the present time, when certain foods are practically excluded from our diet, to turn to William Banting's "Letter on Corpulence, addressed to the Public" (2nd edit., 1863). Mr. Banting, an undertaker by trade, *not* a physician as stated in an American medical dictionary, had found himself growing excessively fat and had sought advice in all directions without finding it. An article in the *Cornhill Magazine* on "What is the Cause of Obesity?" offered no tangible remedy for corpulence, and Banting went the rounds of the consultants without discovering anyone who could relieve him of his too, too solid flesh, till one day, seeking a remedy for increasing deafness, he lighted on an F.R.C.S., "an eminent aural surgeon," whose name he suppresses in the first two editions of his famous pamphlet, and was told to avoid starchy and saccharine matter. He felt better for the new regimen from the first and very soon was the much-talked-of "cure" of the hour. At his house in St. James's-street he was visited by obese persons of fashion, and to them, as well as to the suffering and presumably overfed public, he communicated his dietary. This is remarkable in view of our present shortage of the foods which he avoids—namely, bread, butter, milk, sugar, beer, and potatoes; it forms a vivid picture of the alcoholic and still almost Lucullan fare which was held to constitute short commons just 54 years ago.

"For breakfast," says Mr. Banting, describing his daily menu during his treatment, "I take four or five ounces of beef, mutton, kidneys, broiled fish, bacon, or cold meat of any kind except pork; a large cup of tea (without milk or sugar), a little biscuit, or one ounce of dry toast. For dinner, five or six ounces of any fish except salmon, any meat except pork, any vegetable except potato, one ounce of dry toast, fruit out of a pudding, any kind of poultry or game, and two or three glasses of good claret, sherry, or Madeira—champagne, port, and beer forbidden. For tea, two or three ounces of fruit, a rusk or two, and a cup of tea without milk or sugar. For supper, three or four ounces of meat or fish, similar to dinner, with a glass or two of claret. For nightcap, if required, a tumbler of grog—(gin, whisky, or brandy, without sugar)—or a glass or two of claret or sherry. This plan leads to an excellent night's rest, with from six to eight hours' sound sleep. Toe dry toast or rusk may have a tablespoonful of spirit to soften it, which will prove acceptable."

Grand total about 21 ounces of solids and 30 of liquids, *plus* the grog or the "glass or two," but no quantity need be rigidly adhered to provided the forbidden foods be eschewed.

CRÊPE BANDAGES.

Alfred Velpeau, a Paris surgeon of the middle of the nineteenth century whose name is associated with the introduction of the crêpe bandage, may well be regarded as a benefactor by those who were formerly dependent for elastic pressure on bandages containing caoutchouc. The crêpe bandage, while of constant width, is highly elastic in its length, and is light, cleanly, and well ventilated. Formerly manufactured exclusively in Geneva, crêpe bandages may now be obtained in this country. The Norwich Crape Company (1856), Limited, has sent us samples of bandages and of various qualities of bandage material, all of good make. These bandages may be used with added comfort to the patient to replace the ordinary inelastic bandage under all kinds of conditions. The initial expense is largely compensated by the length of time which the crêpe bandage lasts when carefully used.

TREE "SURGERY."

THERE has recently appeared in the public press an interesting account by Mr. Henry Wood, special correspondent of the United Press of America with the French armies, of the efforts made to restore trees mutilated by Germans in their retreat. There were thousands of trees, he reports, that the close pursuit of the French prevented the Germans from completely cutting down; instead, the tree-killers cut off a circle of bark around the trunk, which with a few days' exposure to the sun would be sufficient to kill peach, plum, apple, apricot, and cherry trees that had been half a century attaining their productiveness. These trees, of course, presented an easy problem to those skilled in arboriculture, and such experts were quickly summoned into counsel on the regained French territory. The wounds were bound up like the wounds of a soldier, and thousands of Army surgeons and Red Cross ambulance drivers and stretcher-bearers assisted in the work. The circle where the bark had been cut away was first covered with a grafting cement and the entire wound bandaged—often with bandages that had been prepared for human limbs. So great was the number of trees that had to be dressed in this way that the entire available supply of grafting preparation was quickly exhausted.

Where the trees had been entirely cut or sawn down the protruding stumps were trimmed, and the exudation of the sap was prevented by clay or cement dressings, while branches from the upper portion of the trees which showed signs of life activity were grafted on many of the severed stumps. To-day, Mr. Wood tells us, these grafts are in full leaf and blossom. The roots appear to have been entirely saved by this process, and years have been saved in restoring the cut-down orchards of France. "Tree surgery" is no new art, and for several years, particularly in America, the practice of preserving trees that have been injured by disease or accident has been successfully carried out by filling stumps with cement. The protection of severed vegetable tissues with wax, tar, and other substances has been long used in horticulture and arboriculture. The principles governing the "surgery" of plants are, in many respects, similar to those which appertain to human surgery.

LONDON CHILDREN'S COUNTRY HOLIDAYS.

THOSE responsible for the Children's Country Holiday Fund are proposing to adopt the same policy this year as last—viz., to select a moderate number of specially ailing children and send them away for the usual fortnight. Railway companies are still willing to charge the half single fare for the children, but the increasing difficulty of finding country homes under existing food conditions and the dearth of available London visitors is likely considerably to reduce the numbers who can safely be sent away. The inspection before leaving London, both in regard to vermin and to possible infection, is so carefully conducted that medical attention is not very frequently required in the country. Under these conditions no hesitation need be felt in assisting this most beneficent work, which is in line with the widespread effort not to let the child-life of the country suffer from the effects of the war if the contingency can in any way be avoided.

THE MEDICAL HISTORY OF THE UNITED STATES.

NOW that American doctors, surgeons, and nurses are arriving in Great Britain and France there will naturally be increased interest in all that concerns them and their history. Much information will be found in the voluminous American Medical Directory published by the American Medical Association at Chicago (fifth edition, 1916, $10). Another useful book is "The Cyclopædia of American Medical Biography," containing the lives of eminent deceased physicians and surgeons from 1610 to 1910. This book was compiled by Dr. Howard A. Kelly and published in two volumes by Messrs. W. B. Saunders Company, London and Philadelphia, in 1912. Other useful particulars are contained in "Who's Who in America," published in London by Kegan Paul, Trench, Trübner, and Co., Limited, and in Chicago by A. N. Marquis and Co. Useful information regarding the Colleges and Universities will be found in the reports of the Commissioner of Education issued by the Department of the Interior and published by the Government Printing Office, Washington, and in the Official Directory of Professional Education in the United States, published by the University of the State of New York. A good source of information is "The World Almanac and Encyclopedia," issued by the Press Publishing Company, Pulitzer Building, New York, of which copies can be obtained in London.

A USEFUL POCKET MEDICINE-CASE.

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T. O.—There is no generally accepted method of classifying cases of pulmonary tuberculosis, but a study of recent reports of tuberculosis officers shows a large proportion who use the Turban-Gerhardt classification, generally with some little modification of their own. Few, if any, have followed the suggestion of giving a separate estimate of extent of disease in the two lungs. Clinicians generally find the need of adding to a classification based upon physical signs some indication of symptoms. Turban always supplemented his original Groups I., II., and III. with the letters F, f, a to indicate febrile, sub-febrile, and afebrile, and + or − to denote the presence or absence of bacillary sputum. Inman's distinction of resting-febrile, resting-afebrile, walking-afebrile cases is the simplest form yet suggested of recording functional ability.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Tuesday, June 12th.

MEDICINE (Hon. Secretaries—Charles R. Box, W. Cecil Bosanquet): at 5.30 P.M.

Lecture (with lantern demonstration):

Major Aldo Castellani: Tropical Diseases to which the Allied Troops are Exposed in the Balkanic Zone.

Wednesday, June 13th.

OPHTHALMOLOGY (Hon. Secretaries—Kilmore W. Brewerton, A. W. Ormond): at 8.30 P.M.

Annual General Meeting.—Election of Officers and Council for 1917–1918.

Discussion:

On "The Etiology and Treatment of Iritis" will be opened by the President (Mr. Lang).

Other Speakers:—Sir Anderson Critchett, Lt.-Col. Elliot, Dr. John Eyre, Dr. Lakin, Mr. Herbert Fisher, Mr. J. G. Turner, Mr. Colyer, Mr. Frank Kidd, Mr. G. H. Pooley, &c.

SOCIETY OF TROPICAL MEDICINE AND HYGIENE, 11, Chandos-street, Cavendish-square, W.

FRIDAY.—5.30 P.M., Papers:—Read for Father G. Greggio (Belgian Congo): The Treatment of Yaws and Other Diseases in the Belgian Congo. Dr. R. T. Leiper: A Note on the Integument of the Bilharzia Miracidium.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye. Dr. Simson: Diseases of Women.

TUESDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

WEDNESDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

THURSDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye.

FRIDAY.—10 A.M., Dr. Simson: Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

SATURDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Eye Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

ROYAL INSTITUTE OF PUBLIC HEALTH, Lecture Hall of the Institute, 37, Russell-square, W.C. 1.

Course of Lectures and Discussions on Public Health Problems under War and After-war Conditions:—

WEDNESDAY.—4 P.M., Lecture IX.:—Lieut.-Col. Sir John Collie, M.D.: The Management of Neurasthenia and Allied Disorders in the Army. Followed by a discussion.

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, June 6th, 1917.

Date.	Rainfall.	Solar Radio in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
May 31	...	118	71	56	56	63	Fine
June 1	...	105	68	56	56	61	Cloudy
,, 2	...	119	69	54	55	61	Cloudy
,, 3	...	120	67	49	53	59	Cloudy
,, 4	...	119	78	50	56	66	Cloudy
,, 5	...	113	81	57	61	71	Fine
,, 6	...	110	67	55	56	60	Cloudy

Other information which we have been accustomed to give in these "Readings" is withheld for the period of the war.

EDITORIAL NOTICES.

It is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITOR," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention should be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, *and when accompanied by blocks it is requested that the name of the author, and if possible of the article, should be written on the blocks to facilitate identification.*

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.

Offices: 423, STRAND, LONDON, W.C. 2.

MANAGER'S NOTICES.

ALTERATION IN THE PRICE OF "THE LANCET."

INCREASED war expenses and cost of production necessitate an increase of the price of THE LANCET. Commencing with the new year, the price was raised to 8*d*. The rates of subscription remain as revised in October.

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Advertisements (to ensure insertion the same week) should be delivered at the Office not later than Wednesday, accompanied by a remittance.

The following journals, magazines, &c. have been received:—Archives Médicales Belges, Transactions of the Society of Tropical Medicine and Hygiene, British Journal of Dental Science, Annales de l'Institut Pasteur, Canadian Journal of Medicine and Surgery, Dominion Medical Monthly, British Dental Journal, Albany Medical Annals, Edinburgh Medical Journal, Archives de Médecine et Pharmacie Navales, British Journal of Ophthalmology, Journal of Mental Science, Parasitology, Journal of State Medicine, &c.

Communications, Letters, &c., have been received from—

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